

# **SPECIFICATION CHANGE NOTICE (SCN)**

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<p>This notice informs recipients that the specification identified by the number (and revision letter) shown in block 4 has been changed. The pages changed by this SCN (being those furnished herewith) carry the same date as this SCN. The page numbers and dates listed below in the summary of changed pages, combined with nonlisted pages of the original issue of the revision shown in block 4, constitute the current version of this specification.</p>							
13. SCN No.		14. Pages Changed (Indicate Deletions)				S*	A*
1		Appendix V (All Pages).				X	8/16/88
2		1, 2, 6, 7, 8, 9, 12, 13, 14, 16, 18, 19, 20, 21, 22, 23, 24, 30, 31, 32, 37, 38, 40, 41, 42, 45, 48, 51, 53, 54, 55, Appendix I (Page 1), Appendix II (Pages 1-3) Appendix III (Page 1), Appendix IV (Table 1).				X	6/30/89
16. Technical Concurrence <i>Walter Kwiatek</i>						17. Date 9-20-89	

\* S - Indicates Supersedes Earlier Page; A - Indicates Added Page



## 1. SCOPE

1. Scope. This specification sets forth the functional requirements for a national Direct User Access Terminal (DUAT) Service. The DUAT Service, which is a part of the National Airspace System (NAS) modernization program, shall enable an authorized user to use a computer terminal or a personal computer to obtain a weather briefing and to file, amend or cancel a flight plan. The contractor will be given direct access to the Federal Aviation Administration (FAA) computers at the Air Route Traffic Control Centers (ARTCC) and to Flight Service Stations (FSS) via the National Airspace Data Interchange Network (NADIN IA). This specification requires the contractor to comply with all technical and procedural requirements and restrictions specified by the FAA with regard to the NADIN IA Interface.

Major service functions include: (1) the capability to select a type of weather briefing - local, route, or selected weather report types for specific locations; (2) the capability to file, amend or cancel a flight plan; and (3) an encode/decode capability which permits the user to either encode a location to receive the appropriate identifier, or decode a location identifier to obtain the location name. The flight plans accepted by the DUAT Service although they are actually flight plan proposals, shall be referred to as flight plans throughout this document.

This specification requires the DUAT Service to be available to authorized users, 24 hours a day, 7 days a week. One or more lines at no cost to the user shall be provided, as needed, for user access to weather and aeronautical information as specified in Section 3 of this document. No outdated information shall be disseminated to a user.

## 2. APPLICABLE DOCUMENTS

2.1 General. These documents, or the issues in effect on the date of the DUAT contract, form a part of this specification and are applicable to the extent specified herein. Other documents which are listed in Appendix I are provided as reference material for background information. In case of conflict this specification shall take precedence.

### 2.1.1 FAA Specifications.

FAA-E-2661a	NADIN IA Specification, Appendix XX, NADIN To Multipoint User Interface Control Document
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### 2.1.2 FAA Standard.

FAA-STD-024	9/85	Preparation of Test and Evaluation Plans and Test Procedures
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### 2.1.3 FAA Publications.

NAS-MD-310	1/1/84	National Airspace System Configuration Management Document Introduction to Specification Series
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NAS-MD-311	1/1/84	National Airspace System Configuration Management Document Message Entry and Checking
NAS-MD-312	8/19/86	National Airspace Configuration Management Route Conversion and Posting
NAS-MD-315	1/1/84	National Airspace System Configuration Management Document Remote Outputs
NAS-MD-316	1/1/84	National Airspace System Configuration Management Document Adaptation
Flight Information Publication		Notices to Airmen (Class II NOTAMS)
Airman's Information Manual		Official Guide to Basic Flight Information and ATC Procedures
FAA-AP0-86-9	8/86	Total Flight Services, Pilot Briefs, Aircraft Contacted and Flight Plans Originated
Computer Data Handbook	6/85	The ADP Selected Data Files Maintained by FAA, Data Services Div. Attn: Information Center Branch, AAC-360 P. O. Box 25082 Oklahoma City, OK 73125
CPFS	6/27/86	Model 1 Computer Program Functional Specification (CPFS) FSDPS Operational Software and System Design Data (WMSD Interface)
2.1.4 <u>FAA Orders.</u>		
FAA Order 1830.1A		Access Policy For Non-FAA Users and Foreign Correspondence to the NICS
FAA Order 7110.80C	5/86	Data Communication Handbook
FAA Order 7110.10H	5/86	Air Traffic Service Handbook
FAA Order 7210.3G Change 7	6/85	Facility Operation and Administration
FAA Order 7210.7C	6/8/86	Flow Control Procedures
FAA Order 7340.1J	6/86	Contractions
FAA Order 7350.5L Change 1	1/86	Location Identifiers

United States Department of Commerce  
National Technical Information Service  
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### 3. REQUIREMENTS

3.1 General. It shall be the responsibility of the contractor to meet the requirements of this specification and to provide a functioning service. Any feature or item necessary for proper DUAT operation, in accordance with the requirements of this specification, shall be incorporated even though the item or feature may not be specifically described herein.

The contractor's DUAT Service shall not have an adverse effect on the National Airspace System (NAS) and shall not adversely affect safety. If either or both of these conditions occur, the contracted DUAT Service shall be shut down as directed by the FAA.

3.2 Requirements Overview. The DUAT Service shall furnish a user, through the use of a computer terminal or personal computer, the following FAA functions: (1) the capability of receiving current and trend alphanumeric weather and Notices to Airmen (NOTAM) data for weather briefings; (2) encoding/decoding location data; and (3) processing a flight plan. No outdated information shall be disseminated to a user. Outdated information is data which are no longer valid or have been replaced with more recent information.

The DUAT Service shall be provided at no cost to authorized users within the conterminous United States. Authorized users shall be domestic certificated civil pilots, authorized FAA personnel and contractors, and other aviation related users as identified by the FAA. The contractor may use previously established toll free numbers. It is not necessary to have a separate toll free number for FAA Services.

The user shall be allowed to move back and forth between FAA functions and contractor value added services within a session. Value added services are contractor provided aviation services other than those which are specified in Section 3 of this document.

A session shall be defined as the total time (sign on or sign off) a user is connected to the contractor service for FAA functions or value added services. An FAA transaction shall be defined as the time the user is actively using FAA functions.

The transaction shall begin when the user enters flight plan data, or receives weather, NOTAM or location identifier data.

The transaction shall end when the user exits the FAA sponsored functions and does not return to these functions during the session.

An FAA transaction shall be limited to a total of 20 minutes per session. The FAA shall only pay for 1 (one) FAA transaction per user session. The user shall be able to terminate the session while in the FAA functions.

A transaction shall be terminated due to excessive user input time or excessive briefing time.

A unique transaction number shall be assigned to each transaction. The contractor's service shall automatically generate and display this number to the user. These numbers shall be assigned sequentially on a daily basis beginning at 2400 UTC. The transaction number shall be stored with the events to the transaction for event recording, reconstruction, and retrieval.

Whenever a user input error is detected, a message shall be output indicating the type of error and the user shall be given the option of reentering.

If a user fails to respond with a keyboard entry within 120 seconds, he shall be requested to continue input.

The Weather Message Switching Center (WMSC) shall be the source of weather data necessary to respond to a DUAT user's request. The contractor's service shall provide current weather information to users 24 hours a day, 7 days a week.

NADIN IA shall be used for the transmission of flight plan and search and rescue data to the ARTCCs and FSSs.

When the term FSS is referenced in this document, it is the intent to include both the Flight Service Station and the Automated Flight Service Station (AFSS).

The following requirements shall be met:

- a) Automatically accept, process, and store meteorological data and NOTAMs received from WMSC.
- b) Accept and process requests from multiple users for DUAT functions.
- c) Accept, process and file flight plan information and interface with ARTCCs and FSSs through NADIN IA.
- d) Store and retrieve data for each transaction as required.

### 3.3 Operational Requirements.

3.3.1 General. The following is a summary of the operational requirements detailed in Section 3.

The following shall be provided:

- a) Local, Route, and Selected Weather Briefings
  - . Display of selected weather and NOTAM data for specific locations
  - . Detailed briefings by route or local area identifiers
  - . Weather Warning by route or local area
  - . Low Altitude (12,000 feet and below), intermediate and high altitudes as determined by the contractor
  - . Display of selected weather types by route

- b) File, Amend, Cancel of Domestic Instrument Flight Rule (IFR) Flight Plans and File, Amend and Cancel of Domestic Visual Flight Rule (VFR) Flight Plans
- c) Flight Plan Input 99% Error Free on a weekly basis
- d) Event Reconstruction (process of retrieving data)
- e) System Security
- f) History Recording (recording of data)
- g) Data Retrieval for Search and Rescue
- h) Activity Reports
- i) Encode/Decode
- j) Availability (minimum monthly downtime)
- k) Automatic Addressing of Flight Plans
- l) Help Function

3.3.2 DUAT Data. This section defines the Government provided data necessary for the operation of the DUAT Service. The two types of data are static flight data and dynamic weather data. The contractor shall edit Government provided data only as directed by the FAA.

3.3.2.1 Static Flight Data. The static flight data is required to support processing of the dynamic weather data and to support provision of the DUAT Service. Although relatively stable, this data shall be subject to modification both on a regularly scheduled basis, and also at the request of the Government.

3.3.2.1.1 Flight Data. The flight data will include selected geographical/airspace data described below. This data is updated on a 56-day cycle. Aircraft designators are updated at varying intervals, but changes will be reflected by the 56-day cycle. Contractor detected errors in the flight data shall be reported to the FAA. The Capability shall be provided for on-site correction of errors which may exist in these data. The capability shall be provided to input and update these data as received. These data shall include:

- a) Victor, Jet, and Area Navigation Data.
- b) Selected Location Identifiers Encode/Decode.
- c) SIDs and STARs.
- d) Preferred Routes.
- e) Weather reporting locations with weather type.
- f) Airports with military airports indicated, NAVAIDS, fixes.
- g) Aircraft Type Designators.

The record formats and file descriptions are in Appendix VI.

3.3.2.1.2 Airmen File. The file shall contain the list of current pilot certificate numbers and the associated pilot's last name, and other authorized users approved by the FAA. The capability to delete users from the file shall be provided. The Airmen File is updated at least every 90 days.

Each entry shall consist of free formatted characters for user's last name and up to nine digits for the pilot's certificate number. The list shall be used to validate the users of the service.

The Airmen File with certificate numbers is maintained by the FAA Data Services Division, Information Center Branch, AAC-360 FAA Aeronautical Center. These data are available on magnetic tape and can be duplicated to a contractor supplied blank tape. The recording characteristics and the record description and format are contained in Appendix VI of this document and are from the Computer Data Handbook listed in Section 2.1.3.

3.3.2.2 Dynamic Weather Data. These dynamic data shall consist of the National Meteorological and NOTAM data transmitted directly from WMSC.

Issue times, format and valid times are subject to change. The contractor shall be responsible to keep current of all WMSC and NWS changes which affect the dynamic weather and NOTAM data base. The documents listed in Section 2.1.6 provide information on weather report type issue and valid times.

Listed below are the display and weather report types and NOTAM retention requirements:

a) Surface Observations (SA). Hourly Surface Observations (SA) shall be retained for a maximum of 185 minutes from the time of receipt for user output. All Special Reports (SPs), or Urgent SP (USPs) shall be displayed with the hourly SA or Record Special (RS) report and deleted with that report. Upon the receipt of a corrected SA, it shall replace the original SA which it corrects. The corrected SA shall then be displayed as indicated above.

b) Terminal Forecasts (FT). Terminal Forecasts (FT) and Routine Delayed Reports (RTD) shall be retained and displayed for 18 hours after time of receipt, when not replaced with a new FT report, FT amendment, or FT correction. A new FT report shall replace all previously received FTs, FT amendments, corrections, and routine delayed.

c) Area Forecasts. Area Forecasts (FA) shall be retained and displayed for 12 hours after time of receipt, when not replaced by a new product. An FA Amendment or an FA correction shall replace the hazard/flight precautions section, the synopsis section, the icing and freezing level section, the turbulence section, or the significant clouds and weather section of the currently stored relevant FA. If a new FA report is not received, the amendment or correction portion shall be deleted with the referent FA.

d) Weather Warnings. Weather Warning data shall be retained and displayed as described below:

- Severe Weather Forecast Alert (AWW)
- Severe Weather Forecast or Bulletins (WW)
- Amended Severe Weather Forecast or Bulletins (WW-A)
  - 6 hours after time of receipt
- Significant Meteorological Information (Sigmet)(WS)
- Urgent WS (UWS)
  - 4 hours unless replaced by a UWS/WS which contains the same alphabetic designation
  - UWS/WS - Alphabetic designations "A" to "N"
- Airmen's Meteorological Information (Airmet) (WA)
  - 6 hours unless updated by a WA which contains the same alphabetic designation
  - WA - Alphabetic designations "O" to "Z"



Tropical Depression/Hurricane Advisory (WH)  
-6 hours from time of receipt  
Severe Weather Outlook (AC)  
-24 hours unless replaced by the receipt of another AC  
Convective Sigmet (WST)  
-1 hour from time of receipt  
Center Weather Advisory (CWA)  
-Until expiration time indicated in message header

Cancellation messages for the Weather Warning data above shall be retained and displayed for two hours after the time of receipt.

e) Pilot Reports (UUA, UA). Pilot Reports (UUA, UA) shall be retained and output to users for two hours after the time of the report. The report time is indicated by the Text Element Indicator "/TM".

f) Radar Weather Reports (SD). Radar Weather Reports (SD) shall be retained and displayed for one hour after time of receipt. Special reports (SPL) shall be appended to the last hourly report and deleted with that report.

g) Winds and Temperature Aloft Forecasts. The contractor shall have the option of using the Wind and Temperature Aloft Forecast (FD) and/or the Grid Wind Temperature Forecast (GF).

FD - Forecast data shall be displayed to the user based on the "for use" period. When more than one forecast is available for a particular valid time or "for use" period, the forecast, based on the latest observation data, shall be displayed. An FD Amendment shall replace the appropriate wind and temperature data. Upon the receipt of a new FD report, it shall replace the previously received FD or FD Amendment.

GF - Grid winds and temperature forecast data shall be displayed based on the forecast valid period. Grid wind bulletins shall be retained until replaced by the corresponding current bulletin or the forecast effective time period has expired whichever occurs first.

h) Notices to Airmen (NOTAM). A new NOTAM shall be added to the NOTAM file when it is received. NOTAM Ds shall be retained in the NOTAM file until deleted by a cancellation message. Cancellation shall be done automatically based on the accountable (reporting) location and sequence number. NOTAM report chains may be used for updating the NOTAMs for a particular location. An edited NOTAM shall replace the corresponding unedited NOTAM. The service shall maintain a current NOTAM file at all times. The NOTAM file shall contain all current NOTAM-Ds and unpublished National Flight Data Center NOTAMs (FDC NOTAMs). The service shall output current NOTAM data to users as described in Sections 3.4.3.2 and 3.4.3.2.7.

3.3.2.3 Data Size. Because the actual amount of storage necessary to store the government provided data is dependent on the implementation, the only sizing guidelines that can be given are for the input size of the weather data, and the number of entries in the static data records. The following tables provide sizing guidelines for the static and dynamic data.

STATIC DATA

	NO. OF ITEMS
AIRPORTS	17250
NAVAIDS	2400
WEATHER REPORTING LOCATIONS	1800
FIXES	12500
PREFERRED ROUTES HIGH	300
PREFERRED ROUTES LOW	500
JET AIRWAYS	400
VICTOR AIRWAYS	800
PILOTS	1 MILLION

TABLE 1  
DYNAMIC DATA BASE

WEATHER/NOTAM REPORT TYPE	NUMBER OF REPORTS	AVG SIZE (CHARS.)	FREQ. OF TRANS/DAY	ESTIMATED TOTAL STORAGE REQUIREMENT (CHARACTERS)
Surface Observations and Cor	1600	51	S 24	244,800
Supplementary, Special and				
Urgent Special Observation	1600	48	U	244,800
Terminal Forecasts	800	95	S 53	76,000
Pilot Reports (PIREPS)	1600	73	U	117,000
Notice to Airmen (NOTAM-Ds)	2200	39	U	85,800
NOTAM Summary	1600	39	S 3	62,500
FDC NOTAMs	150	350	U	53,000
Winds Aloft				
FD1	400	71	S 3	28,400
FD2	400	71	S 3	28,400
FD3	400	71	S 3	28,400
High Altitude Winds Aloft				
FD8	200	20	S 3	4,000
FD9	200	20	S 3	4,000
FD10	200	20	S 3	4,000
Grid Wind Bulletins	36	1600	S	68,000
Radar Reports	200	68	S	13,600
Area Forecasts				
Hazards	10	300	S 3	3,000
Synopsis	10	200	S 3	2,000
Icing	10	200	S 3	2,000
Turbulence	10	150	S 3	1,500
Significant Clouds	10	1000	S 3	1,000
Severe Weather Forecast				
Alert		800	U	800
Sigmets	10	100	U	1,000
Airmets	10	200	U	2,000
Convective Sigmet	3	400	S 24	1,200
Hurricane/Tropical				
Depression Advisories		800	U	
Severe Weather Outlook		800	S 2	800
Center Weather Advisory		800	U	3,200
Note: S = Scheduled				
U = Unscheduled				

TABLE 2

3.3.3 WMSC (Service A) Capabilities. Service A Meteorological and NOTAM data are transmitted principally on a schedule from the FAA Weather Message Switching Center (WMSC). The Service A Interface Control Document (ICD) contained in Appendix IV defines the interface between the WMSC and the Flight Service Data Processing Systems (FSDPSS); when the contractor's DUAT Service interfaces with the WMSC, it shall abide by this ICD. Message formats are defined in FAA Orders 7110.80 and 7930.2, and Section 2, of the Model 1 Computer Program Functional Specification (CPFS) FSDPS Operational Software and System Design Data.

3.3.3.1 Response Time. The DUAT Service shall respond within 300 milliseconds after receipt of the last character (byte) of a message received from WMSC, see Appendix IV.

3.3.3.2 Data Received From WMSC. The capability shall exist to accommodate the Service A line protocol for incoming data and to store the data. All incoming messages shall be identified with the date and time of receipt. No duplicate weather messages shall be stored as a result of transmission from WMSC. Cancellation messages shall cause the appropriate message to be deleted. Cancellation messages for weather warnings shall be displayed to the user.

3.3.4 NADIN IA Capabilities. NADIN IA shall be the primary means for transmission and receipt of flight movement data and for other NADIN IA type messages as defined in this specification. The NADIN IA interface control document defined in Appendix XX of Order FAA-E-2661a is included as Appendix V of this document.

3.3.4.1 Data Received via NADIN IA. The incoming messages, including search and rescue, error, and acknowledgment message, shall be identified with the date and time of receipt. The contractor shall process and store all search and rescue messages received. These messages shall be retained in the system until canceled.

3.3.4.2 NADIN IA Transmission Capabilities. The capability shall be provided to automatically perform all line protocol operations, format the data, add the control characters and transmit the messages to the locations identified in the addressee field. The addressee field and message precedence for all flight data messages shall also be automatically provided.

3.3.5 Event Recording and Reconstruction. Event reconstruction shall be provided to aid in aircraft accident/incident investigation and reporting. Accordingly, two major functions of event recording and reconstruction shall be performed: 1) Recreation of the real time weather data, and 2) storage, retrieval and printing of the events related to a specific user or aircraft over a specific interval of time. Event recording shall include: all inputs (e.g., all user entries and requests, and all messages received from WMSC and NADIN IA, etc.) and all outputs (e.g., messages transmitted over NADIN IA to ARTCCs and FSSs and messages sent to the user). These events shall be recorded in sufficient detail to permit event reconstruction automatically or manually, and retrieval from storage for 15 days.

Event Reconstruction data shall be made available in response to requests received from FAA Air Traffic Control Facilities, the Search and Rescue Coordination Center (RCC), Flight Standards, National Transportation Safety Board (NTSB), or other agencies as authorized by the FAA.

3.3.5.1 Retention Data. The following information shall be available and stored for at least 15 days:

- User Access Code
- Date of Transaction
- Time Transaction Began and Ended (UTC)
- Transaction Number
- Aircraft Identification
- Pilot's Name
- Service Functions selected and options chosen
- Identification and sequence of Weather Briefing Products requested
- Identification, content, and sequence of Weather Briefing Products which were output either partially or completely, or prepared for output but not displayed due to user option
- Complete Flight Plan Data, including Flight Plans Filed, Amendments and Cancellations
- Total Time of Transaction
- Number and Types of all Weather Briefings Requested

3.3.5.2 Retrievability. The capability shall be provided to retrieve the retention data (specified in 3.3.5.1) either locally or remotely by any one or more of the following: (1) Aircraft Identification; (2) Transaction Number; (3) Access Code; (4) Pilot's last name.

3.3.5.3 Search and Rescue Requests (SAR). Upon the receipt of a Data Request on Aircraft (QALQ), Information Request (INREQ), or Alert Notice (ALNOT), or a request from an authorized agency as described in Section 3.3.5, a search of the event reconstruction data shall be performed for the aircraft identification or pilot's last name contained in the SAR request.

The search shall begin with the most recent data and continue through the previous 24 hours.

3.3.5.3.1 Response to SAR Requests. If there is information available from the DUAT Service within the preceding 24 hours or for a specific time frame (start/stop) included in the request, on the aircraft or pilot's name contained in the request, all transactions and required available data as described in Section 3.3.5.3.2 shall be retrieved. There shall be a response to the first SAR type message received for each different aircraft identification, and depending on data available, the text of the response shall be as described in Section 3.3.5.3.2.

The retention data shall be sent only once for each aircraft or pilot identification contained in an SAR request.

If no match is found in the 24 hour retention data for the affected aircraft identification or pilot's name, the DUAT Service shall advise the requesting facility or agency.

The contractor shall respond to a QALQ, INREQ, or ALNOT within 15 minutes after receipt of the request. The contractor shall respond to the requesting Facility or Agency either automatically or manually.

When an INREQ or ALNOT is current, the contractors DUAT Service shall continue to search future transactions for the affected aircraft identification and respond as described herein, until the INREQ or ALNOT is canceled.

#### 3.3.5.3.2 Data Included in the Response

- a) Aircraft Identification
- b) Date/Time of Transaction
- c) Transaction Number
- d) Pilot's Name
- e) Complete Flight Plan Data:  
Flight Plan data transmitted shall be those which have been forwarded to an FSS or ARTCC.
- f) If weather and/or NOTAM data was provided, the system shall include "Briefing Data provided and it is available under Request for Details."

3.3.5.4 Detailed Transaction Requests. Upon receipt of a request from an authorized agency as described in Section 3.3.5, a detailed reconstruction of the event(s) shall be prepared within 48 hours and mailed to the requesting agency. All data as described in Section 3.3.5.1 shall be retrieved by the transaction number or aircraft identification. When the aircraft identification is contained in the request, all data retained for the 15-day retention cycle or for a specific start/stop time contained in the request, shall be retrieved. The contractor shall maintain a record of those agencies and facilities who request and receive SAR and Event Recording/Reconstruction data.

3.3.5.5 DUAT Activity Statistics. The capability shall be provided to produce statistics summarizing DUAT activity on a daily basis ending at 2359 (UTC). The daily statistics shall be generated to a printer and shall summarize DUAT activity for the preceding calendar day. The statistics shall be maintained for FAA use and forwarded weekly to the FAA.

The daily DUAT activity statistics shall contain all of the items listed below:

- Total Number of Transactions
- Total Number of Transactions per hour
- Total Number of VFR Flight Plans filed
- Total Number of VFR Flight Plans accepted
- Total Number of IFR Flight Plans filed
- Total Number of IFR Flight Plans accepted and rejected
- Total Number of Weather Briefings
- Total Number of each type Weather Briefing
- Mean Transaction Time

3.3.5.6 Operations Statistics. The monthly operations statistics shall be submitted to the FAA within 15 days after the close of the month. These statistics shall be signed by an authorized officer of the contractor. The statistics shall include, as a minimum, the data listed below. All items shall be reported for the month and year-to-date in the format provided by the FAA.

1. Total number of transactions.
2. Mean transaction time (minutes and seconds).
3. Total number of VFR and IFR flight plans filed, amended, or canceled.
4. Total number of IFR flight plans accepted and rejected.
5. Total number of VFR flight plans accepted.
6. Total number of requests for (a) low altitude route brief, (b) intermediate altitude route brief, (c) high altitude route brief, (d) route briefing/selected report type, (e) local weather briefing, (f) local weather brief/selected report types, (g) selected weather for specific locations.
7. Total number of times in which the Encode or Decode function was requested.

### 3.4 Functional Requirements.

3.4.1 Access Security. The contractor shall comply with FAA-Order 1600.54A and Office of Management and Budget (OMB) Circular No. A-130, Appendix III. The contractor shall ensure that unauthorized access or modifications to their FAA sponsored DUAT Service data bases by any user is impossible. When a user enters the FAA sponsored functions, preliminary user information shall be required to guarantee security. Only authorized users shall be allowed to access these functions. Access shall be provided by a user access code and password. The access code shall be a user identification number which shall be unique to each user. The password shall be selected by the user. Access to the FAA sponsored functions shall not be allowed unless the user enters a valid access code and password.

Once a user has accessed the FAA function, the user shall not be required to re-enter this data when moving back and forth between the FAA functions and contractor value added services within a session.

The access code shall consist of, as a minimum, a unique eight-digit assigned number. The password shall be alphanumeric and the number of characters is at the discretion of the contractor. The access code and password shall be obscured to maintain security.

The user's entries for access code and password shall be validated after the password entry. When the access code and password cannot be validated, an error message shall be displayed. When a valid access code and password have not been entered after two attempts, the user shall be denied entry into the FAA sponsored functions.

The capability of deleting an access code and password shall be required in times of suspected or confirmed service abuse. The user shall be able to obtain a new access code and password when authorized by the FAA.

The Airmen File data base update will provide for the addition and deletion of authorized users. The contractor may change the access code and allow the user to change the password on a regular basis.

3.4.1.1 Access Code Assignment and Password Selection. In order for the first time user to access the service, he shall be given the opportunity to receive an access code and choose a password.

The user shall be required to enter his last name and pilot certification number for comparison with the Airmen File. The last name, certification number, access code, and password of each authorized user shall be maintained. When the search is made and a match is not found, a message shall be output indicating that the service cannot issue an access code and password because it was unable to validate the name and certification number. When a match is found and the user has not previously received an access code, a message shall be output indicating that the pilot should retain the following access code received, and his password, for future access. When the user attempts to receive another access code and password, a message shall be output indicating that he has already received an access code and password.

### 3.4.2 User Information.

3.4.2.1 User System Characteristics. The output to the user shall be formatted to the user's terminal type and characteristics.

3.4.2.2 Date and Time Display. The date and current time (UTC) shall be transmitted at the beginning and end of each transaction.

3.4.2.3 User's Aircraft Identification. The user shall be given the option to enter his aircraft identification, if known. The user shall not be allowed to enter an improperly formatted aircraft identification (see FAA-Order 7110.10, Chapter 6 for valid aircraft identification). The aircraft identification shall be stored and used, if entered, for search and rescue, event reconstruction, and flight plan filing purposes.

3.4.2.4 Function Selection. The user shall be able to select any of the FAA functions.

3.4.2.5 Help Function. A help function shall be provided to explain the valid responses for the service requested entries. Help messages shall reflect the specified field sizes, the required format, and data types which shall be alpha, numeric, character, or a combination of the three types. Access to the help function shall be provided any time the service requires input from the user. Upon access to the help function, an explanation to assist the user shall be output and the prompt for which the help was requested shall be reissued.

3.4.3 Weather Briefing Function. The capability for the user to obtain a weather briefing shall be required as described herein.

3.4.3.1 Weather and Notice to Airmen (NOTAM) Message Types. The WMSC report types, including corrections and amendments, identified below shall be required.

- (a) SA, SP, RS, USP, SW, AMOS, AUTOB, RAMOS (Surface Observations, Special Surface Observations, Record Special Surface Observations, Urgent Special Observations, Supplemental Surface Observations, Automated Surface Observations, and all corrections (COR) there to.)
- (b) UA, UUA (Pilot Reports and Urgent Pilot Reports)
- (c) AWW (Severe Weather Forecast Alert)
- (d) WW, WW-A (Severe Weather Forecast, Severe Weather Forecast Status Report).
- (e) WH Tropical Depression and Hurricane Advisories, which includes the following message types:
  - ABNT20 KMIA Tropical Weather Outlook
  - AXNT20 KMIA Tropical Weather Discussion
  - WTNT31-35 KMIA Public Tropical Cyclone Advisory
  - WTNT21-25 KMIA Marine Tropical Cyclone Advisory
  - WTPZ21-25 KMIA Marine Tropical Cyclone Advisory
  - WTNT41-45 KMIA Tropical Cyclone Discussion
  - WTNT51 KMIA Tropical Cyclone Position Estimate
  - WONT41 KMIA Special Tropical Disturbance Statement
  - WOPZ41 KMIA Special Tropical Disturbance Statement
  - WWNT21-25 KMIA Marine Subtropical Storm Advisory
- (f) AC (Severe Weather Outlook, available to the user through the Selected Weather for Specific Locations Function only, Section 3.4.3.4.6).
- (g) WST (Convective Sigmet)
- (h) WS, UWS (Sigmets and Urgent Sigmets)
- (i) WA (Airmets)
- (j) CWA (Center Weather Advisory and Urgent Center Weather Advisory UCWA)
- (k) FA (Area Forecast) - FA Forecasts are divided into five sections; each section being identified by a letter code: Hazards/Flight Precautions (H); Synopsis (S); Icing and Freezing Level (I); Turbulence (T); and Significant Clouds and Weather (C).
- (l) FA COR, FA AMD (Area Forecast, Correction, Amendment)
- (m) FT, FT COR, FT AMD, FT RTD (Terminal Forecast, Correction, Amendment, Routine Delayed Terminal Forecast)
- (n) FD1, FD2, FD3, FD8, FD9, FD10 (Forecast Winds and Temperatures Aloft) and/or Grid Wind and Temperature Forecasts.
- (o) SD (Radar Weather Observations including Special Observations, SPL)
- (p) ! (Domestic Notice to Airmen)
- (q) FDC (Flight Data Center Notice to Airmen, Cancellations) NOTE: FDC NOTAMs shall be available to user through the Selected Weather for Specific Locations (Section 3.4.3.4.6).

3.4.3.2 Processing Requirements. All weather and NOTAM data utilized for briefing users shall always be the most recently transmitted in its category, including specials and other updated weather. If a failure occurs, the weather briefing data utilized when operations resume shall be the most recently transmitted weather and NOTAM data and a complete data base. When a report type is unavailable, a message shall be output advising the user.

3.4.3.2.1 Missing Surface Observations. When the current hourly Surface Observation (SA) for the current hour is not available, a message shall be output indicating no current data and the most current SA or RS report shall be displayed including the latest specials available within the past two hours on the next line.

3.4.3.2.2 Forecast Winds and Temperature Aloft Data. Forecast Wind and Temperature Aloft (FD) and/or Grid Wind and Temperature Forecast (GF) shall be provided.



The Forecast Winds and Temperature Aloft Data output to the user shall be based on the proposed time of departure and the estimated time enroute (ETE) for all local and route briefings. The valid time and the "for use" periods shall also be displayed.

All forecast wind and temperature aloft data output to the user shall be in altitudes of thousands of feet.

3.4.3.2.2.1 Altitude Categories. The Low Altitude Category shall consist of the forecasted winds and temperature for the forecast levels beginning at 3,000 feet, where available , and up to and including 12,000 feet. The break-points for intermediate and high altitude levels shall be determined by the contractor. These categories shall consist of the forecast winds and temperatures for the forecast level beginning at 12,000 feet up to and including the highest level reported.

3.4.3.2.2.2 FD/GF Retrieval/Output. The contractor's DUAT Service shall retrieve and output FD and/or GF data to users as follows:

#### Route Briefings

- FD - The closest FD to the entered departure point and destination. All FD reporting locations encompassed in the search area (RWXC) (see Section 3.4.3.3.1). Additionally, if necessary, the search area shall be extended to retrieve FD data for every 200 nautical miles (maximum) for any portion of the route of flight.
- GF - The interpolated GF for the departure point, destination, and for fixes along the route of flight for every 200 nautical miles as a maximum.

#### Local Briefings

- FD - The FD reporting locations encompassed within the search area (LWXR); (see Section 3.4.3.3.2), or the closest FD for the location entered.
- GF - The interpolated GF for the location entered.

The low level altitude category FD/GF shall be output for a local briefing.

#### Selected Weather for Specific Locations

- FD - The closest FD for the weather reporting location entered.
- GF - The interpolated GF for the weather reporting location entered.

3.4.3.2.3 Unscheduled Reports. All urgent, special, supplementary, corrected, and amended reports, as applicable, shall be included in output data. For surface observations, all special reports received shall be output with the last scheduled report.

3.4.3.2.4 Tropical Depression/Hurricane Advisories. When there is a current hurricane advisory, tropical depression advisory(s), or both, the entire product(s) shall be displayed when the user selects a route briefing with selected report types, a local weather briefing with selected report types, or selected weather and enters WH as a report type.

When the user selects a route briefing with selected report types or local weather briefing with selected report types and does not request the report type WH, but they do exist, an alerting message indicating their availability shall be output with the warning data.

For all other user selected briefings, an alerting message shall be displayed indicating that the advisory(s) is available for retrieval by using the selected weather function.

3.4.3.2.5 Area Forecast. When the user selects a low altitude route briefing, an intermediate altitude route briefing, a high altitude route briefing, or a local weather briefing, the weather hazards, synopsis, icing/freezing level, and turbulence/low level wind shear paragraphs from the appropriate Area Forecast(s) shall be output. The significant clouds and weather section(s) shall be output after the terminal forecasts, if the user desires this section(s).

Note: The above processing is applicable for multiple Area Forecasts to be output sequentially in a route briefing.

When the user selects a route briefing with selected report types, a local weather briefing with selected report types, or selected weather and has entered FA as a report type, the complete Area Forecast(s) shall be output.

3.4.3.2.6 Weather Warnings/In-Flight Advisories. All report types (WW, AWW, WW-A, WST, WS, UWS, WA, CWA, and WH) including corresponding corrections, amendments, and cancellation messages shall be displayed according to their issuance designators. Cancellation messages shall be output to users for two hours after time of receipt. Expired reports shall not be displayed to the user.

3.4.3.2.7 Pilot Reports/Notices to Airmen. Pilot reports shall be retrieved by the location identifier of the reporting facility. Domestic Notice to Airmen (NOTAM Ds) shall be retrieved by the affected facility identifier for all weather briefing functions except Selected Weather for Specific Locations (Section 3.4.3.4.6).

Exception: FDC NOTAMs shall be available to user via selected weather for specific locations (see Section 3.4.3.4.6). They shall be available upon receipt by the contractor's service and until canceled or published in the Notices to Airmen Class Two NOTAMs Publication. The method of retrieval of FDC NOTAMs shall be determined by the contractor. The FDC NOTAMs output to the user shall include general, flight restrictions, airway and airport/facilities/procedural NOTAMs.

3.4.3.2.8 Weather Trends. Weather Trend (WT) information shall be provided when the user selects a route briefing with selected report types, a local weather briefing with selected report types, or selected weather and requests WT as a report type.

Weather Trend data shall apply to the Surface Observations only. When a

user's request includes WT as a report type, the current and past two hours Surface Observations including the latest specials for the location(s) selected or specified route shall be output.

3.4.3.3 Search Area. Search areas shall be defined by parameter values. Parameter values shall be changeable by the contractor, but only at the request of the FAA. See Appendix III for parameter values.

3.4.3.3.1 Route Briefings. For all route-oriented briefings, the search area for weather reporting locations shall be a parameter value (RWXC) (half the parameter value (RWXC) on each side of the route including half the parameter value (RWXC) radius around the departure point and destination).

When the user has selected a low altitude route briefing, 12,000 feet or below, all current and forecasted weather product and NOTAM data for all weather reporting locations encompassed in the search area shall be output. Those report types (example: WST, WW, etc.) which affect the search area shall also be output. This output shall include all report types as described in Section 3.4.3.1.

For route briefings above 12,000 feet, the number of break-points for intermediate or high altitude briefing levels shall be at the contractor's discretion. The retrieval and output of enroute Surface Observations and Terminal Forecasts shall also be at the contractor's discretion. The Surface Observation and Terminal Forecast for the departure point and destination shall be output in addition to the report types described in Section 3.4.3.1 for the entire search area.

The Surface Observation(s) and Terminal Forecast shall be displayed, if available, for the two closest weather reporting locations in his route corridor in lieu of the departure point, destination, or both, if either or both are not weather reporting locations.

3.4.3.3.2 Local Briefings. For local weather briefings the search area for weather reporting locations shall be parameter value (LWXR) of the entered location identifier.

3.4.3.3.3 Radar Weather Reports. The search areas for Radar Weather Reports are as follows:

S-Band Reporting Sites = parameter value radius (SBRA) of a weather reporting location.

C-Band Reporting Sites - Parameter value radius (CBRA) of a weather reporting location.

The search for the closest S-Band Report shall be performed first. When an S-Band Report is found, it shall be included in the output data. When an S-Band Report is not found, a search for the closest non S-band (C-Band) Report shall be performed. When a C-Band Report is found, it shall be included in the output data.

Radar Weather Reports from the following ARTCCs shall be processed as S-Band Reports and output in a collective format.

- a. Albuquerque - ZAB
- b. Salt Lake - ZLC
- c. Auburn (Seattle) - ZSE
- d. Palmdale (Los Angeles) - PMD

Except for the ARTCC's collective reports, only one Radar Weather Report shall be processed for each weather reporting location.

3.4.3.4 Obtain Weather Briefing. The capability of obtaining weather briefings shall be required. The user shall have the capability of obtaining the following types of weather briefings:

- Low Altitude Route Briefing (12,000 feet and below)
- Intermediate and High Altitude Route Briefings  
(Break-points at contractor's discretion)
- Route Briefing with User Selected Report Types
- Local Weather Briefing
- Local Weather Briefing with User Selected Report Types
- Selected Weather for Specific Locations

3.4.3.4.1 Route Briefings. The user shall be prompted for input when obtaining a route briefing. He shall be requested to enter the departure point, altitude, proposed departure time, destination, route of flight, and the estimated time enroute. When an IFR preferred route of flight is available for the departure point/destination specified, processing shall continue as described in Section 3.4.4.4.3.

When a user has filed a flight plan(s) during the current transaction, he shall have the capability of using that route data for obtaining a route briefing. The DUAT Service shall provide this capability after the user enters the departure point and destination for the route briefing. The user shall also have the capability to enter the route of flight. This data shall be used to obtain valid weather and NOTAM data for the briefing.

3.4.3.4.2 Route Briefing Low/Intermediate/High Altitude.

3.4.3.4.2.1 Processing. When the user selects a low, intermediate or high altitude route briefing, a search shall be performed for all the weather reporting locations within the search area. (See Section 3.4.3.3.1) The weather products retrieved and output for these types of briefings are identical except for the following two areas: (1) Enroute Surface Observations and Enroute Terminal Forecasts retrieved and output for intermediate and high altitude are to be determined by the contractor; (2) Wind and Temperature Aloft Forecast for a low altitude route briefing shall be for the forecast levels from 3,000 feet to 12,000 feet. Wind and temperature aloft forecasts output for intermediate and high altitude briefing shall be determined by the contractor (see Section 3.4.3.2.2).

3.4.3.4.2.2 Sequence of Data Output for Low, Intermediate, and High Altitude Route Briefing. A proposed departure time, departure point, altitude, destination, route of flight, and estimated time enroute shall be required prior to retrieving data for a route briefing. The following weather products and NOTAM data, when available, shall be labeled and segmented when output to the user. The sequence of data output is to be determined by the contractor.

ADVERSE CONDITIONS

HAZARDS (Flight Precautions)  
ICING AND FREEZING LEVEL  
TURBULENCE, LOW LEVEL WIND SHEAR  
SEVERE WEATHER WARNINGS (WW - Includes AWW, WW-A)  
TROPICAL DEPRESSION/HURRICANE ADVISORIES (WH) — Alert message if current data available  
SIGMETs (WS - Includes Urgent SIGMETs UWS)  
CONVECTIVE SIGMETs (WST Includes Special WST Bulletins)  
CENTER WEATHER ADVISORIES (CWA and Urgent Center Weather Advisories UCWA)  
AIRMETS (WA)

From Area Forecast(s)

SYNOPSIS (FROM AREA FORECAST)

CURRENT CONDITIONS

SURFACE WEATHER OBSERVATIONS (SA) - All for Low Altitude Route Briefings  
PILOT REPORTS (UA)  
RADAR WEATHER REPORTS (SD)

FORECAST CONDITIONS

TERMINAL FORECASTS (FT) - All for Low Altitude Route Briefings  
SIGNIFICANT CLOUDS AND WEATHER  
PORTION FROM AREA FORECAST(S) (If Requested)  
WINDS AND TEMPERATURE ALOFT FORECASTS (FD)  
OR GRID WINDS (GF)

NOTICES TO AIRMEN (NOTAMs) (NOTAM Ds Only)

Note: The service shall display data for more than one Area Forecast when the route traverses more than one Area Forecast area.

3.4.3.4.3 Route Briefing with Selected Report Types.

3.4.3.4.3.1 Processing. When the user selects the route briefing with selected report types as described in Section 3.4.3.4.6, he shall be allowed to select the report types desired for the specified route in lieu of the standard briefing products (as described in 3.4.3.4.2.2) for a route briefing. A search shall be performed within the search area (see Section 3.4.3.3.1) to find weather reporting locations consistent with the report types identified by the user.

3.4.3.4.3.2 Sequence of Data Output for Route Briefing/Selected Report Types. A proposed departure time, departure point, altitude, destination, route of flight, and estimated time enroute shall be required prior to retrieving data for a Route Briefing/Selected Report Types. After the user has entered his desired report types, the requested report types and other severe weather, when available, shall be labeled, segmented and output to the user. The sequence of data output is to be determined by the contractor.

## USER REQUESTED REPORT TYPES

### ADVERSE CONDITIONS - (If not requested)

HAZARDS (Flight Precautions)	———— From Area Forecast(s)
ICING AND FREEZING LEVEL	
TURBULENCE, LOW LEVEL WIND SHEAR	
SEVERE WEATHER WARNINGS (WW - Includes AWW, WW-A)	
TROPICAL DEPRESSION/HURRICANE ADVISORIES (WH)	—Alert message if current data available
SIGMETs (WS - Includes Urgent SIGMETs UWS)	
CONVECTIVE SIGMETs (WST Includes Special WST Bulletins)	
CENTER WEATHER ADVISORIES (CWA and Urgent Center Weather Advisories UCWA)	
AIRMETS (WA)	

3.4.3.4.4 Local Weather Briefing. The capability to provide a local weather briefing shall be required. A location identifier (see FAA Order 7350.5) shall be required, and shall identify the center point of the search area for the briefing.

Upon entry of a valid location identifier and the proposed departure time, all current and forecasted weather products, and NOTAM data shall be output for all weather reporting locations encompassed in the search area (see Section 3.4.3.3.2). Those report types which affect the search area shall be output, example WST, WW, etc. The significant clouds and weather from Area Forecast shall be an option for the local weather briefing. This output shall include all report types as described in Section 3.4.3.1.

The sequence of data output shall be determined by the contractor. The weather products and NOTAM data, when available, shall be labeled and segmented.

3.4.3.4.5 Local Weather Briefing With Selected Report Types. The capability to provide a local weather briefing with selected report types shall be required. A location identifier (see FAA Order 7350.5) and the proposed departure time shall be required as indicated in Section 3.4.3.4.4. The location identifier entered by the user shall be associated with the report type(s) to be entered later.

Upon receipt of a valid location identifier, the user shall be requested to enter the report type(s) associated with the previously entered location identifier. Multiple report types shall be allowed.

Upon receipt of a valid report type(s) (see Section 3.4.3.4.6), the requested data shall be output for all weather reporting locations, within the search area (see Section 3.4.3.3.2) of the entered location identifier. The requested data and other severe weather shall be output as described in Section 3.4.3.4.3.2.

When the user selects Area Forecast as a report type, all the sections shall be output.

3.4.3.4.6 Selected Weather for Specific Locations. The capability to provide selected weather for specific locations shall be required. The user shall be requested to enter the proposed departure time and the location identifier(s) for a weather reporting location desired. Multiple entries for location identifier shall be made available to the user.

The user shall be requested to enter the report type(s) associated with the previously entered location identifier(s). The following is a list of the possible report types the user can select.

WEATHER TRENDS (SA'S FOR 3 HOURS)  
SEVERE WEATHER WARNINGS (INCLUDES WW, AWW, WW-A)  
SIGMETS (WS- INCLUDES Urgent SIGMETS UWS)  
CONVECTIVE SIGMETS (WST Includes Special WST Bulletins)  
TROPICAL DEPRESSION/HURRICANE ADVISORIES (WH)  
AIRMETS (WA)  
SEVERE WEATHER OUTLOOK  
CENTER WEATHER ADVISORIES (CWA and URGENT CENTER WEATHER  
ADVISORIES UCWA)  
AREA FORECASTS  
SURFACE WEATHER OBSERVATIONS (INCLUDES, .SA, SP, RS,  
USP, SW, AMOS, RAMOS, AUTOB)  
TERMINAL FORECASTS  
PILOT REPORTS  
WINDS AND TEMPERATURE ALOFT FORECASTS (FDs OR GF BULLETINS)  
NOTAMs "Ds"  
FDC NOTAMs  
RADAR WEATHER REPORTS

When a user's request contains a report type which is not valid for a location identifier entered, a message shall be displayed in the output data indicating it is not valid.

The requested report types for the specified location(s) shall be output to the user.

FDC NOTAM retrieval method shall be determined by the contractor, however, the contractor's service shall output all applicable FDC NOTAMs for the user request as described in Section 3.4.3.2.7.

#### 3.4.4 Process Flight Plan Data.

3.4.4.1 Processing Requirements. The DUAT user shall be provided with the capability to enter and file a domestic flight plan, make amendments to a flight plan, and cancel a flight plan.

All amendments or cancellations shall be accomplished within the contractor's service prior to transmitting to an Air Traffic Facility.

Message formatting, coding and text for system originated flight plans and related messages shall be as described in FAA Orders 7110.10 and 7110.80.

3.4.4.2 Flight Plan Acceptance. Flight plans accepted by the service shall be domestic IFR or VFR flight plans for the conterminous United States. The contractor shall be responsible to ensure that acknowledgments are received for flight plans which have been accepted by the contractor's service as described in Sections 3.4.4.3.3.1 and 3.4.4.3.3.2.

IFR Flight Plans shall be accepted by the contractor's service when the proposed departure time exceeds the ARTCC parameter time (ATCT).

VFR Flight Plans shall be accepted by the contractor's service when the proposed departure time exceeds the parameter time (FSST).

When an IFR flight plan is eligible for transmission to an ARTCC, it shall be transmitted in accordance with that ARTCC's parameter time (ATCT).

When a VFR flight plan is eligible for transmission to an FSS, it shall be delayed until a parameter time (FSST) prior to the proposed departure time.

Flight plans shall not be accepted unless all the required flight plan data blocks contain acceptable entries, see FAA Flight Plan Form 7233-1 (Airman's Information Manual). Data blocks that shall not require an entry are 11 (Remarks), 13 (Alternate Airport), and 17 (Destination Contact/Telephone).

The IFR flight plan shall be acceptable to the enroute computers as described in NAS-MD-311 and NAS-MD-312 before accepting the flight plan from the user.

#### 3.4.4.3 Flight Plan Storage/Transmission.

3.4.4.3.1 Storage/Transmission of IFR Flight Plans. Storage for IFR flight plans shall be provided. The capability for dynamically modifying the time in advance that IFR flight plans are transmitted to the ARTCC shall be required. This transmission time is at the discretion of the ARTCCs. Duplicate flight plans, as described in NAS-MD-311, shall not be accepted for transmission to the ARTCC.

IFR flight plans shall be reformatted in accordance with the established ARTCC computer format as stated in NAS-MD-311 and then transmitted to the controlling ARTCC for the airport of departure, a parameter time (ATCT) prior to the proposed departure time or as directed by the ARTCC.

The user shall be allowed to retrieve the flight plan for amending or canceling as described in Sections 3.4.4.5.1 and 3.4.4.6.1.

3.4.4.3.2 Storage/Transmission of VFR Flight Plans. The capability shall exist to store VFR flight plans from time of receipt until a parameter time (FSST) prior to the proposed departure time. During this period, the user shall be allowed to retrieve the flight plan for amending or canceling.

The capability shall exist to transmit VFR flight plans to the tie-in FSS for the departure airport, a parameter time (FSST) see Appendix III, prior to the proposed departure time. The data transmitted shall include the same flight plan data described in 7110.10 for VFR outbounds departing from outside the flight plan area.

3.4.4.3.3 Acknowledgments. The contractor shall be responsible for obtaining acknowledgments for flight plans which their service transmitted over NADIN. These acknowledgments should be received via NADIN. When an acknowledgment is not received, the contractor shall abide by Sections 3.4.4.3.3.1 and 3.4.4.3.3.2.

3.4.4.3.3.1 IFR Acknowledgments. The IFR flight plan shall be delivered via a different method to the addressed ARTCC for the departure airport ten



### 3.4.5 Encode/Decode Function.

3.4.5.1 Encode. The capability to encode a location (see FAA Order 7350.5) shall be required. The user shall be requested to enter the location and state (optional) to be encoded. An entry from 3 to 42 characters in length shall be accepted. These entries can be an airport name, city, weather reporting location, or Navigation Aid (NAVAID). The two-letter state abbreviation shall be an optional field.

The required data shall be output for all locations in the data base that match it exactly or that contain at the beginning of its location name, the exact sequence of letters entered. The encode function shall allow the user to enter a minimum of the first three letters, in the correct order, of the location to be encoded. The data shall be output for all-locations in the data base which match the user's entry.

When the state identifier is not entered, all matching locations in the United States shall be displayed. When no matching location is found, a message shall be output indicating no data stored.

The response for each location provided shall include: (1) each different airport, NAVAID, or weather reporting station identifier; (2) the associated airport, NAVAID name, or both; (3) the associated city name; and (4) the state two-letter identifier.

3.4.5.2 Decode. The capability to decode a location identifier(s) shall be required. The user shall be requested to enter the location identifier(s) to be decoded. Three to five characters shall be accepted for each identifier and up to 10 identifiers per request. When one or more location identifier(s) is entered in error, the required data shall be output for the correct entries, but a message shall be output indicating that no data is stored for the incorrect ones.

The response for each location identifier provided shall include: (1) the airport, NAVAID or weather reporting identifier; (2) the airport, or NAVAID name; (3) the associated city name; (4) the state two-letter identifier; (5) the airport or NAVAID tie-in FSS identifier; and (6) the associated ARTCC.

3.4.5.3 Escape to Encode/Decode Function. The capability to escape from any function which requires a departure point, destination route of flight, and alternate airport to the Encode or Decode function and return, directly to the function when the data output is completed, shall be required.

3.5 DUAT HARDWARE. The contractor shall provide all hardware, except for the user terminals. This includes acquisition and installation of all data communication lines, which includes user access lines.

3.5.1 DUAT User Interface. User terminals shall interface with the contractor's service through the public switched telephone network via dialed lines. (See Bell System Technical Reference PUB 41214, Data Set 212A Interface Specification, Data Set 103 Interface Specification and CCITT V.22 bis.) The modems and dial-up ports shall meet the requirements of Table 3 and also shall have automatic answering capability. The transmit speed (minimum

300 bps) of the DUAT originate modem shall be automatically determined, and operation adjusted for the proper transmission/reception speed (minimum 300 bps) to match the requirements of the DUAT originate modem. The equipment shall respond to a call disconnect originated by the user or by the service. (See EIA-RS-232-C, EIA-RS-366, EIA-RS-449)

#### DUAT INTERFACE

LINE TYPE	FDX
LINE SPEED	300 bps 1200 bps 2400 bps
CHARACTER SET	ASCII
LINE PROTOCOL	10 and 11 bit START/STOP
CIRCUIT TYPE	SWITCHED

TABLE 3

3.5.2 Access to NADIN IA. The FAA has established rules and procedures whereby the contractor shall be granted access to the National Airspace Data Interchange Network (NADIN IA) Message Switched Network (MSN) for the sole purpose of filing both IFR and VFR domestic flight plans, and receiving and responding to search and rescue messages. The contractor's interface to NADIN IA shall be at two concentrators located at the Air Route Traffic Control Centers (ARTCC), as designated by the FAA. The two interfaces are required in order to provide a backup in case of a line or equipment failure. The contractors' service shall recognize a failure and relay data to the other concentrator. Under normal conditions, because of load sharing requirements, the contractor shall alternate successive message transmissions between the two NADIN concentrators. These rules and procedures, which shall be furnished to the contractor, include NAS operational requirements for receiving and processing flight plan messages as well as NADIN IA interface control data. The contractor shall comply with FAA Order 1830.1A and all technical and procedural requirements and restrictions specified by the FAA (See Appendix V).

3.5.3 Interface Requirements - Overview. The contractor to NADIN IA/NAS interface described herein will enable the contractor to forward machine readable flight plan messages to NAS Flight Data Automation Systems resident located at ARTCCs in the conterminous United States. The contractor shall access the NADIN IA Message Switching Network (MSN), and NADIN IA via an assigned multipoint circuit at a designated TELCO Central Office (CO).

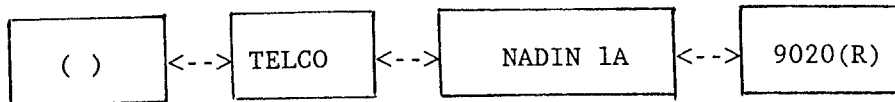
3.5.3.1 Components. The contractor shall establish and maintain the capability to generate machine-readable flight plan messages for data transmission to the NAS and to receive/process rejected flight plan data messages from the NAS.

The FAA will provide for the interface capability at both concentrators. The contractor shall be responsible for the interface access line installation and maintenance.

NADIN IA will provide switching and transmission services for contractor data exchanges with 9020(R)s.

NAS Flight Data Automation Systems are the functional users of flight plan data messages forwarded by the contractor.

3.5.3.2 Contractor to NAS Interface -- Overview Diagram.



3.5.3.3 Flight Plan Messages -- Format and Content. The contractor shall transmit flight plan messages to 9020(R)s. 9020(R)s will transmit rejected flight plan messages to the contractor. All messages originated by the contractor shall contain the originator's unique address indicator which will be unique to each contractor's DUAT Service and assigned by the FAA.

Data exchanges between the contractor and the 9020(R)s shall comply with FAA Publications NAS-MD-310, NAS-MD-311, NAS-MD-315, NAS-MD-316 plus all applicable restrictions and requirements.

3.5.3.4 Flight Plan Messages -- Filing Procedures.

3.5.3.4.1 Routing. The contractor shall transmit IFR flight plan messages to the controlling 9020(R)/ARTCC for the cited airport of departure. The contractor shall transmit VFR flight plan messages to the controlling FSS for the departure airport. The FAA will provide the contractor with the required routing tables plus updates, as indicated, in machine readable format.

3.5.3.4.2 Error Rate. The error rate for flight plan messages (number of flight plan messages rejected divided by number of flight plan messages filed) shall not exceed 1 percent on a weekly basis.

3.5.3.5 Access to NADIN IA -- Interface Control Data.

3.5.3.5.1 Address Indicator. The contractor shall be assigned a unique NADIN IA address indicator by the NADIN IA Cutover Manager.

3.5.3.5.2 Technical Requirements. The contractor shall interface with NADIN IA via an assigned multipoint circuit at a designated TELCO CO. Contractor data exchanges with NADIN IA shall comply with the NADIN IA Specification, FAA-E-2661a (see Appendix V), plus all applicable restrictions and requirements.

3.5.4 Service Integration. The contractor shall be responsible for making the system fully operable when interfaced with all external systems specified by the government herein. The contractor shall verify that the interface designs operate properly when installed.

3.6 DUAT SOFTWARE. The contractor shall provide all the software necessary to implement the DUAT Service.

The operational software shall provide support for commercially available asynchronous terminals. Output shall be received via CRT, hardcopy printout, or both. The user shall be able to stop and restart the display output. The categories of terminals that are to be supported shall include:

1. Alphanumeric Hardcopy.
2. Alphanumeric Display.

3.7 Service Reliability/Maintainability/Availability. The contractor shall plan and implement reliability, availability, and maintainability procedures to fully satisfy the functional and operational requirements of this specification.

3.7.1 Service Operation. The DUAT Service shall be designed and constructed with a service life of 24 hours a day, 7 days a week for 5 years.

3.7.2 Service Availability. The system shall be available for use not less than .99701 in any 30-day period. "Unavailable time" is the interval of time coincident with the duration of the following events:

- o The service fails to operate
- o The service fails to operate in accordance with specifications
- o The service operates inconsistently or erratically
- o The service is in the process of being maintained or repaired
- o A hardware or software component of the system is inoperative which renders the entire service useless for user purposes
- o There is a defect in software.

Service Line Availability - Line availability is the probability that any attempt to access the DUAT Service made by an authorized user with a DUAT will result in a connection providing reliable bi-directional data transfer. Line availability shall be 0.95.

The service/line availability excludes natural disasters.

The contractor shall maintain a record of their DUAT Service unavailable time.

3.7.3 Responsibility. The contractor shall have one clearly identified organizational element which shall be responsible for the planning and management of the contract reliability program and for ensuring its effective execution.

### 3.8 Documentation.

3.8.1 Instructional Material. The contractor shall be responsible for the printing and distribution of all DUAT Service instructional material. All instructional material shall be subject to FAA approval. The contractor shall prepare a DUAT User's Guide, which shall contain as a minimum, the following:

- a. A detailed description of the DUAT Service from a user's viewpoint.
- b. Instructions on how to use the service, including examples.
- c. A description of, and instructions on, the use of the control functions available to the user.

3.8.2 Public Information. The contractor shall prepare all public information, which may be in any form including print, radio, or video. It may include public relations and advertising material. All public information shall be subject to FAA approval.

3.8.3 Documentation Approval. The contractor shall submit all instructional material and public information regarding their DUAT Service to the Contracting Office for approval prior to distribution or release.

Specification's Section 3 Paragraph Number/ Shall Number	Requirement Title, Summary or Key Words	Verification Method - Specification Reference
3.1	General	
3.1	/1 Meet requirements and provide functioning service	4.1.4.3
3.1	/2 Incorporate all necessary features and items	4.1.4.3
3.1	/3 Not have adverse effect on NAS	4.1.4.3
3.1	/4 Not adversely affect safety	4.1.4.3
3.1	/5 Service shutdown	4.1.4.3
3.2	Requirements overview	
3.2	/1 Furnish user with capabilities ...	4.1.4.3
3.2	/2 No outdated information disseminated	4.1.4.4
3.2	/3 Provided at no cost to authorized users within the conterminous U.S.	4.1.4.3 or 4.1.4.4
3.2	/4 Domestic certificated civil pilots and authorized FAA	4.1.4.4
3.2	/5 Move between FAA and users value added functions	4.1.4.4
3.2	/8 Transaction begins	4.1.4.3
3.2	/9 Transaction ends	4.1.4.3
3.2	/10 FAA transaction limited to 20 min. per session	4.1.4.4
3.2	/11 Pay for 1 transaction per session	4.1.4.4
3.2	/12 Terminate in the FAA function	4.1.4.1
3.2	/13 Transaction terminated due to excessive time	4.1.4.4
3.2	/14 Unique transaction number	4.1.4.4
3.2	/15 Generate and display this number	4.1.4.1
3.2	/16 Assigned sequentially	4.1.4.4
3.2	/17 Stored with events	4.1.4.4

TABLE 4. NATIONAL ACCEPTANCE TEST REQUIREMENTS TRACEABILITY MATRIX

Specification's Section 3 Paragraph Number/ Shall Number	Requirement Title, Summary or Key Words	Verification Method - Specification Reference
3.2	/18 Message indicating type of error	4.1.4.1
3.2	/19 User given option of re-entering	4.1.4.4
3.2	/20 Requested to continue input	4.1.4.4
3.2	/21 WMSC source of weather	4.1.4.4
3.2	/22 Provide current weather 24 hr/day, 7 days/week	4.1.4.3 or 4.1.4.4
3.2	/23 MADIM-1A for transmission	4.1.4.4
3.2	/24 Following requirements met: A-D	4.1.4.3 or 4.1.4.4
3.3	Operational Requirement	
3.3.1	Following shall be provided: A-L	4.1.4.3
3.3.2	Edit Government provided data as directed	4.1.4.4
3.3.2.1	Static flight data subject to modification	4.1.4.4
3.3.2.1.1	/1 Errors reported	4.1.4.4
3.3.2.1.1	/2 On-site correction of flight data	4.1.4.4
3.3.2.1.1	/3 Input and update data as received	4.1.4.4
3.3.2.1.1	/4 Flight data includes A-G	4.1.4.4
3.3.2.1.2	/1 Contents of airman file	4.1.4.4
3.3.2.1.2	/2 Capability to delete users	4.1.4.4
3.3.2.1.2	/3 Entry consist of free-formatted characters	4.1.4.4
3.3.2.1.2	/4 List used to validate users	4.1.4.4
3.3.2.2	/1 Contents of dynamic weather data	4.1.4.4
3.3.2.2	/2 Responsible to keep current	4.1.4.4
3.3.2.2a	/1 SA retained for 185 minutes	4.1.4.4

TABLE 4. NATIONAL ACCEPTANCE TEST REQUIREMENTS TRACEABILITY MATRIX (CONTINUED)

Specification's Section 3 Paragraph Number/ Shall Number	Requirement Title, Summary or Key Words	Verification Method - Specification Reference
3.3.2.2a	/2   SPs and USPs displayed and deleted with hourly SA and RS	4.1.4.4
3.3.2.2a	/3   Corrected SA replaces original SA	4.1.4.4
3.3.2.2a	/4   Corrected SA displayed	4.1.4.4
3.3.2.2b	/1   FTs and RTDs retained for 18 hours when not replaced	4.1.4.4
3.3.2.2b	/2   New FT report replaces	4.1.4.4
3.3.2.2c	/1   FAs retained for 12 hours	4.1.4.4
3.3.2.2c	/2   FA amendment or FA correction replaces	4.1.4.4
3.3.2.2c	/3   New FA not received - delete amendment or correction	4.1.4.4
3.3.2.2d	/1   Weather warning data retained as described	4.1.4.4
3.3.2.2d	/2   Cancellation for weather warning data	4.1.4.4
3.3.2.2e	UUA, UA not displayed 2 hours after report	4.1.4.4
3.3.2.2f	/1   SDs retained for 1 hour	4.1.4.4
3.3.2.2f	/2   SPLs appended to hourly report	4.1.4.4
3.3.2.2g	/1   Option of FD or GF	4.1.4.4
3.3.2.2g	/2   Forecast data displayed	4.1.4.4
3.3.2.2g	/3   More than one forecast available	4.1.4.4
3.3.2.2g	/4   FD amendment replaces	4.1.4.4
3.3.2.2g	/5   Upon receipt of new FD report	4.1.4.4
3.3.2.2g	/6   Display based on forecast valid period	4.1.4.4
3.3.2.2g	/7   Grid winds bulletin	4.1.4.4
3.3.2.2h	/1   New NOTAM added to NOTAM file	4.1.4.4
3.3.2.2h	/2   NOTAM deleted when cancellation message received	4.1.4.4
3.3.2.2h	/3   Edited NOTAM replaces unedited NOTAM	4.1.4.4

TABLE 4. NATIONAL ACCEPTANCE TEST REQUIREMENTS TRACEABILITY MATRIX (CONTINUED)

Specification's Section 3 Paragraph Number/ Shell Number	Requirement Title, Summary or Key Words	Verification Method - Specificati Reference
3.3.2.2h /4	Maintain current NOTAM file	4.1.4.4
3.3.2.2h /5	Contents of NOTAM file	4.1.4.4
3.3.2.2h /6	Output current NOTAMS	4.1.4.4
3.3.3	Abide by the ICD	4.1.4.4
3.3.3.1	Respond within 300 milliseconds	4.1.4.4
3.3.3.2 /1	Accommodate line protocol for Service A	4.1.4.4
3.3.3.2 /2	Identify with date and time of receipt	4.1.4.4
3.3.3.2 /3	No duplicate messages stored	4.1.4.4
3.3.3.2 /4	Appropriate message deleted	4.1.4.4
3.3.3.2 /5	Cancellation messages displayed	4.1.4.4
3.3.4	MADIN-1A primary means of transmission	4.1.4.4
3.3.4.1 /1	Incoming messages - date and time of receipt	4.1.4.4
3.3.4.1 /2	SAR messages processed and stored	4.1.4.4
3.3.4.1 /3	Retained until cancelled	4.1.4.4
3.3.4.2 /1	Automatically perform all line protocol	4.1.4.4
3.3.4.2 /2	Automatically provide field and message precedence	4.1.4.4
3.3.5 /1	Event reconstruction provided	4.1.4.4
3.3.5 /2	Two major functions of event recording and reconstruction	4.1.4.4
3.3.5 /3	Event recording includes	4.1.4.4
3.3.5 /4	Recorded in sufficient detail	4.1.4.4
3.3.5 /5	Event reconstruction data made available	4.1.4.4
3.3.5.1	Contents of data to be stored for 15 days	4.1.4.4
3.3.5.2	Retrieve either locally or remotely	4.1.4.4

TABLE 4. NATIONAL ACCEPTANCE TEST REQUIREMENTS TRACEABILITY MATRIX (CONTINUED)



Specification's Section 3 Paragraph Number/ Shall Number	Requirement Title, Summary or Key Words	Verification Method - Specification Reference
3.3.5.3	/1 Perform search of data	4.1.4.4
3.3.5.3	/2 Search begins with most recent data	4.1.4.4
3.3.5.3.1	/1 All transactions and required data shall be retrieved for specific time or 24 hours	4.1.4.4
3.3.5.3.1	/2 Response to the 1st SAR type request	4.1.4.4
3.3.5.3.1	/3 Text as described in 3.3.5.3.2	4.1.4.4
3.3.5.3.1	/4 Retention data sent only once	4.1.4.4
3.3.5.3.1	/5 If no match is found	4.1.4.4
3.3.5.3.1	/6 Respond within 15 minutes to a QALQ, INREQ or ALNOT	4.1.4.4
3.3.5.3.1	/7 Respond automatically or manually	4.1.4.4
3.3.5.3.1	/8 Continue to search	4.1.4.4
3.3.5.3.2	/1 Forwarded flight plans shall be transmitted	4.1.4.4
3.3.5.3.2	/2 Response to include statement in 3.3.5.3.2(f)	4.1.4.4
3.3.5.4	/1 Detailed reconstruction prepared and sent	4.1.4.4
3.3.5.4	/2 Data described in 3.3.5.1 retrieved	4.1.4.4
3.3.5.4	/3 All data retained for the 15-day cycle or specific time period	4.1.4.1 or 4.1.4.4
3.3.5.4	/4 Maintain a record	4.1.4.1
3.3.5.5	/1 Produce daily DUAT summary statistics	4.1.4.1 or 4.1.4.4
3.3.5.5	/2 Generated to the printer	4.1.4.3
3.3.5.5	/3 Summary activity for preceding calendar day	4.1.4.1 or 4.1.4.4
3.3.5.5	/4 Maintained for FAA use	4.1.4.1 or 4.1.4.4
3.3.5.5	/5 Contents of daily statistics	4.1.4.1 or 4.1.4.4
3.3.5.6	/1 Monthly operations statistics	4.1.4.1 or 4.1.4.3
3.3.5.6	/2 Signed by authorized officer of the contractor	4.1.4.1

TABLE 4. NATIONAL ACCEPTANCE TEST REQUIREMENTS TRACEABILITY MATRIX (CONTINUED)

Specification's Section 3 Paragraph Number/ Shall Number	Requirement Title, Summary or Key Words	Verification Method - Specification Reference
3.3.5.6	/3 Contents of monthly statistics	4.1.4.1 a
3.3.5.6	/4 Reported for month and Y.T.D.	4.1.4.3 4.1.4.1 b 4.1.4.3
3.4	Functional Requirements	
3.4.1	/1 Unauthorized access or modifications	
3.4.1	/2 User information required to guarantee security	4.1.4.4
3.4.1	/3 Only authorized user's allowed access	4.1.4.4
3.4.1	/4 Access provided by access code and password	4.1.4.4
3.4.1	/5 Access code is user ID number	4.1.4.4
3.4.1	/6 Access code is unique to each user	4.1.4.4
3.4.1	/7 Password selected by the user	4.1.4.4
3.4.1	/8 Access to FAA sponsored functions	4.1.4.4
3.4.1	/9 Once service accessed no need to re-enter	4.1.4.4
3.4.1	/10 Access code to consist of a minimum 8-digit assigned number	4.1.4.4
3.4.1	/11 Password to be alphanumeric	4.1.4.4
3.4.1	/12 Code and password obscured	4.1.4.4
3.4.1	/13 Code and password validated	4.1.4.4
3.4.1	/14 Error message displayed when not validated	4.1.4.4
3.4.1	/15 After 2 attempts user denied entry	4.1.4.4
3.4.1	/16 Capability to delete code and password	4.1.4.4
3.4.1	/17 Obtain new code and password when FAA authorized	4.1.4.4
3.4.1.1	/1 User given opportunity to receive code and password	4.1.4.4
3.4.1.1	/2 User required to enter last name and pilot cert. no.	4.1.4.4

TABLE 4. NATIONAL ACCEPTANCE TEST REQUIREMENTS TRACEABILITY MATRIX (CONTINUED)

Specification's Section 3 Paragraph Number/ Shall Number	Requirement Title, Summary or Key Words	Verification Method - Specification Reference
3.4.3.2.7	/4 Available upon receipt	4.1.4.4
3.4.3.2.7	/5 Method of retrieval	4.1.4.4
3.4.3.2.7	/6 PDC NOTAMS output	4.1.4.4
3.4.3.2.8	/1 WT information provided	4.1.4.4
3.4.3.2.8	/2 WT data applies to SA only	4.1.4.4
3.4.3.2.8	/3 Contents of WT data	4.1.4.4
3.4.3.3	/1 Search areas defined by parameter values	4.1.4.4
3.4.3.3	/2 Parameter values changeable by the contractor but only at the request of the FAA	4.1.4.4
3.4.3.3.1	/1 Route briefing search area	4.1.4.4
3.4.3.3.1	/2 All weather reporting locations output	4.1.4.4
3.4.3.3.1	/3 Report types output	4.1.4.4
3.4.3.3.1	/4 All types included in section 3.4.3.1	4.1.4.4
3.4.3.3.1	/5 Number of break points for intermediate or high altitude	
3.4.3.3.1	/6 Retrieval and output for SA and FTs	4.1.4.4
3.4.3.3.1	/7 SA and FT for departure point and destination	4.1.4.4
3.4.3.3.1	/8 SA and FT for two closest weather reporting locations	4.1.4.4
3.4.3.3.2	Local weather briefing search area	4.1.4.4
3.4.3.3.3	/1 Search for closest S-band	4.1.4.4
3.4.3.3.3	/2 S-Band Report found	4.1.4.4
3.4.3.3.3	/3 S-Band Report not found	4.1.4.4
3.4.3.3.3	/4 C-Band Report	4.1.4.4
3.4.3.3.3	/5 Radar reports from ARTCCs	4.1.4.4
3.4.3.3.3	/6 One radar report per weather reporting location	4.1.4.4

TABLE 4. NATIONAL ACCEPTANCE TEST REQUIREMENTS TRACEABILITY MATRIX (CONTINUED)

Specification's Section 3 Paragraph Number/ Shell Number	Requirement Title, Summary or Key Words	Verification Method - Specification Reference
3.4.3.4	/1 Obtain weather briefing	4.1.4.4
3.4.3.4	/2 Types of weather briefings obtained	4.1.4.4
3.4.3.4.1	/1 Prompted for input	4.1.4.4
3.4.3.4.1	/2 Requested to enter data	4.1.4.4
3.4.3.4.1	/3 Processing for IFR per 3.4.4.4.3	4.1.4.4
3.4.3.4.1	/4 Filed FP during current transaction	4.1.4.4
3.4.3.4.1	/5 User enters departure point and destination	4.1.4.4
3.4.3.4.1	/6 Enter route of flight	4.1.4.4
3.4.3.4.1	/7 Obtain valid weather and NOTAM data	4.1.4.4
3.4.3.4.2.1	/1 Search for all weather reporting locations	4.1.4.4
3.4.3.4.2.1	/2 Wind and temperature aloft for low altitude	4.1.4.4
3.4.3.4.2.1	/3 Wind and temperature aloft output	4.1.4.4
3.4.3.4.2.2	/1 Requirements for retrieving data	4.1.4.4
3.4.3.4.2.2	/2 Weather products and NOTAM information labeled and segmented	4.1.4.4
3.4.3.4.2.2	/3 Display more than one FA	4.1.4.4
3.4.3.4.3.1	/1 Select report types desired	4.1.4.4
3.4.3.4.3.1	/2 Search for weather reporting locations	4.1.4.4
3.4.3.4.3.2	/1 Information required prior to retrieving data	4.1.4.4
3.4.3.4.3.2	/2 Report types and severe weather labeled and segmented	4.1.4.4
3.4.3.4.4	/1 Provide local weather briefing	4.1.4.4
3.4.3.4.4	/2 A location identifier required	4.1.4.4
3.4.3.4.4	/3 Identify centerpoint of search area	4.1.4.4
3.4.3.4.4	/4 Information output	4.1.4.4

TABLE 4. NATIONAL ACCEPTANCE TEST REQUIREMENTS TRACEABILITY MATRIX (CONTINUED)

Specification's Section 3 Paragraph Number/ Shall Number	Requirement Title, Summary or Key Words	Verification Method - Specification Reference
3.4.3.4.4 /5	Report types output	4.1.4.4
3.4.3.4.4 /6	Option for local weather brief	4.1.4.4
3.4.3.4.4 /7	Output to include all report types in 3.4.3.1	4.1.4.4
3.4.3.4.4 /8	Sequence of data output determined by contractor	4.1.4.4
3.4.3.4.4 /9	Weather products and NOTAM labeled and segmented	4.1.4.4
3.4.3.4.5 /1	Local weather brief with selected report types	4.1.4.4
3.4.3.4.5 /2	Location identifier required 3.4.3.4.4	4.1.4.4
3.4.3.4.5 /3	Location identifier associated with report type	4.1.4.4
3.4.3.4.5 /4	Request to enter report type	4.1.4.4
3.4.3.4.5 /5	Multiple report type allowed	4.1.4.4
3.4.3.4.5 /6	Requested data output	4.1.4.4
3.4.3.4.5 /7	Output as in 3.4.3.4.3.2	4.1.4.4
3.4.3.4.5 /8	Entire FA output	4.1.4.4
3.4.3.4.6 /1	Selected weather for specific locations	4.1.4.4
3.4.3.4.6 /2	Requested to enter location ID and proposed departure time	4.1.4.4
3.4.3.4.6 /3	Multiple entries made available	4.1.4.4
3.4.3.4.6 /4	Requested to enter report types	4.1.4.4
3.4.3.4.6 /5	Message for non-valid location ID	4.1.4.4
3.4.3.4.6 /6	Requested report types output	4.1.4.4
3.4.3.4.6 /7	FDC NOTAM retrieval	4.1.4.4
3.4.3.4.6 /8	Output all applicable FDC NOTAMS	4.1.4.4
3.4.4.1 /1	Enter and file domestic flight plan	4.1.4.4
3.4.4.1 /2	Amendments and cancellations accomplished	4.1.4.4

TABLE 4. NATIONAL ACCEPTANCE TEST REQUIREMENTS TRACEABILITY MATRIX (CONTINUED)

Specification's Section 3 Paragraph Number/ Shall Number	Requirement Title, Summary or Key Words	Verification Method - Specification Reference
3.4.4.1	/3 Flight plan information in 7110.10 + 7110.80	4.1.4.4
3.4.4.2	/1 Flight plans accepted	4.1.4.4
3.4.4.2	/2 Contractor responsible until acknowledgment	4.1.4.4
3.4.4.2	/3 IFR flight plans accepted	4.1.4.4
3.4.4.2	/4 VFR flight plans accepted	4.1.4.4
3.4.4.2	/5 IFR flight plan transmitted in accordance	4.1.4.4
3.4.4.2	/6 VFR flight plan eligible for transmission	4.1.4.4
3.4.4.2	/7 Flight plans not accepted	4.1.4.4
3.4.4.2	/8 Data blocks not requiring an entry	4.1.4.4
3.4.4.2	/9 IFR flight plans acceptable to enroute computers	4.1.4.4
3.4.4.3.1	/1 Storage for IFR flight plans provided	4.1.4.4
3.4.4.3.1	/2 Dynamically modify time in advance	4.1.4.4
3.4.4.3.1	/3 Duplicate flight plans not accepted	4.1.4.4
3.4.4.3.1	/4 IFR flight plans reformatted and transmitted	4.1.4.4
3.4.4.3.1	/5 User allowed to retrieve flight plan	4.1.4.4
3.4.4.3.2	/1 Store VFR flight plans	4.1.4.4
3.4.4.3.2	/2 User allowed to retrieve	4.1.4.4
3.4.4.3.2	/3 Transmit VFR flight plan	4.1.4.4
3.4.4.3.2	/4 Data transmitted as per 7110.10	4.1.4.4
3.4.4.3.3	/1 Responsible for obtaining acknowledgements	4.1.4.4
3.4.4.3.3	/2 Acknowledgement not received	4.1.4.4
3.4.4.3.3.1	IFR flight plan delivered via different method	4.1.4.4 or 4.1.4.4
3.4.4.3.3.2	VFR flight plan delivered via different method	4.1.4.4 or 4.1.4.4

TABLE 4. NATIONAL ACCEPTANCE TEST REQUIREMENTS TRACEABILITY MATRIX (CONTINUED)

Specification's Section 3 Paragraph Number/ Shall Number	Requirement Title, Summary or Key Words	Verification Method - Specification Reference
3.4.4.5.1	/14 Modified flight plan redisplayed	4.1.4.4
3.4.4.5.1	/15 Allowed to enter additional changes	4.1.4.4
3.4.4.5.1	/16 Format check flight plan	4.1.4.4
3.4.4.5.1	/17 Acceptance message for amended flight plan	4.1.4.4
3.4.4.5.1	/18 Contractor responsibility	4.1.4.4
3.4.4.5.2	/1 Processing of VFR flight plan amendments	4.1.4.4
3.4.4.5.2	/2 Transmit amended VFR flight plan to FSS	4.1.4.4
3.4.4.5.2	/3 Once transmitted can't amend	4.1.4.4
3.4.4.5.2	/4 Advise that flight plan has been forwarded	4.1.4.4
3.4.4.5.2	/5 Tie-in FSS identified	4.1.4.4
3.4.4.6	/1 Cancel IFR or VFR flight plan	4.1.4.4
3.4.4.6	/2 Base cancel on access code, etc.	4.1.4.4
3.4.4.6	/3 Comply with requirements	4.1.4.4
3.4.4.6	/4 Flight plan data retained for event reconstruction	4.1.4.4
3.4.4.6	/5 Compare access code + aircraft ID	4.1.4.4
3.4.4.6	/6 Not permitted to cancel using different access code	4.1.4.4
3.4.4.6	/7 Not permitted if file with different DUAT service	4.1.4.4
3.4.4.6.1	/1 Cancellation measures for proposed IFR only	4.1.4.4
3.4.4.6.1	/2 Cancel IFR flight plan	4.1.4.4
3.4.4.6.1	/3 Advise that ARTCC has flight plan	4.1.4.4
3.4.4.6.1	/4 Number of flight plans on file	4.1.4.4
3.4.4.6.1	/5 Message indicating no flight plan exists	4.1.4.4
3.4.4.6.1	/6 Retrieve and display flight plan	4.1.4.4

TABLE 4. NATIONAL ACCEPTANCE TEST REQUIREMENTS TRACEABILITY MATRIX (CONTINUED)

Specification's Section 3 Paragraph Number/ Shall Number	Requirement Title, Summary or Key Words	Verification Method - Specificati- Reference
3.4.4.6.1	/7 Display flight plans sequentially	4.1.4.4
3.4.4.6.1	/8 Message indicating no other flight plan exists	4.1.4.4
3.4.4.6.1	/9 Message indicating flight plan canceled	4.1.4.4
3.4.4.6.2	/1 Cancel VFR flight plan	4.1.4.4
3.4.4.6.2	/2 Number of VFR flight plans determined	4.1.4.4
3.4.4.6.2	/3 Output VFR flight plans one at a time	4.1.4.4
3.4.4.6.2	/4 Determine if VFR proposal transmitted	4.1.4.4
3.4.4.6.2	/5 Name of tie-in FSS output to user	4.1.4.4
3.4.4.6.2	/6 Message indicating no flight plan exists	4.1.4.4
3.4.4.6.2	/7 Message indicating flight plan canceled	4.1.4.4
3.4.4.6.2	/8 Canceled flight plan not transmitted	4.1.4.4
3.4.4.6.2	/9 Retained for event reconstruction	4.1.4.4
3.4.5.1	/1 Capability to encode a location	4.1.4.4
3.4.5.1	/2 User requested to enter location	4.1.4.4
3.4.5.1	/3 Entry from 3-42 characters	4.1.4.4
3.4.5.1	/4 Two-letter state abbreviation-optional field	4.1.4.4
3.4.5.1	/5 Required data output for all locations	4.1.4.4
3.4.5.1	/6 Minimum of first 3 letters	4.1.4.4
3.4.5.1	/7 Data output for all locations	4.1.4.4
3.4.5.1	/8 All matching locations in U.S. displayed	4.1.4.4
3.4.5.1	/9 Message for no match	4.1.4.4
3.4.5.1	/10 Data included in each response	4.1.4.4
3.4.5.2	/1 Decode location identifier	4.1.4.4

TABLE 4. NATIONAL ACCEPTANCE TEST REQUIREMENTS TRACEABILITY MATRIX (CONTINUED)



June 30, 1989

Specification's Section 3 Paragraph Number/ Shall Number	Requirement Title, Summary or Key Words	Verification Method - Specification Reference
3.4.5.2	/2   Requested to enter location identifier	4.1.4.4
3.4.5.2	/3   3-5 characters/10 identifiers per request	4.1.4.4
3.4.5.2	/4   Required data output for correct entries	4.1.4.4
3.4.5.2	/5   Message output indicating no data stored	4.1.4.4
3.4.5.2	/6   Data included in each response	4.1.4.4
3.4.5.3	Escape to encode/decode function	4.1.4.4
3.5	DUAT Hardware	
3.5	Provide all hardware except user terminal	4.1.4.3
3.5.1	/1   Interface through public switched telephone	4.1.4.4
3.5.1	/2   MODEM + dial-up ports meet Table 3 requirements	4.1.4.4
3.5.1	/3   Automatic answering capability	4.1.4.4
3.5.1	/4   Transmit speed determined by originate MODEM	4.1.4.4
3.5.1	/5   Respond to a call disconnect	4.1.4.4
3.5.2	/1   Rules + procedures for access to MADIN 1A	4.1.4.4
3.5.2	/2   Interface at two concentrators	4.1.4.4
3.5.2	/3   Recognize a failure and relay data to the other concentrator	4.1.4.4
3.5.2	/4   Alternate successive message transmissions	4.1.4.4
3.5.2	/5   Rules and procedures furnished	4.1.4.4
3.5.2	/6   Comply with 1630.1A and all technical and procedural requirements	4.1.4.4
3.5.3	Access via multipoint circuit at designated TELCO Company	4.1.4.3 4.1.4.4
3.5.3.1	/1   Generate machine readable flight plan messages	4.1.4.4
3.5.3.1	/2   Responsible for interface access line	4.1.4.3

TABLE 4. NATIONAL ACCEPTANCE TEST REQUIREMENTS TRACEABILITY MATRIX (CONTINUED)

Specification's Section 3 Paragraph Number/ Shall Number	Requirement Title, Summary or Key Words	Verification Method - Specificatio Reference
3.5.3.3	/1 Transmit flight plans to 9020(R)s	4.1.4.4
3.5.3.3	/2 Messages to contain originators unique address	4.1.4.1 or 4.1.4.4
3.5.3.3	/3 Data exchanges to comply with NAS documents	4.1.4.4
3.5.3.4.1	/1 Transmit IFR flight plan messages to controlling 9020(R)/ARTCC	4.1.4.4
3.5.3.4.1	/2 Transmit VFR to controlling FSS	4.1.4.4
3.5.3.4.2	Error rate for flight plan messages not to exceed 1X/week	4.1.4.2
3.5.3.5.1	Assigned NADIN 1A address indicator by cutover manager	4.1.4.3
3.5.3.5.2	/1 Interface with NADIN 1A via assigned multipoint circuit	4.1.4.3
3.5.3.5.2	/2 Data exchanges with NADIN 1A comply with FAA-E-2661a	4.1.4.4
3.5.4	/1 Operable when interfaced with all external systems	4.1.4.3 or 4.1.4.4
3.5.4	/2 Verify interface designs	4.1.4.3
3.6	DUAT Software	
3.6	/1 Provide all necessary software	4.1.4.3
3.6	/2 Support commercially available asynchronous terminals	4.1.4.3
3.6	/3 Output received via CRT, hardcopy printout, or both	4.1.4.3
3.6	/4 User able to stop and restart the display	4.1.4.3
3.6	/5 Categories of terminals to be supported	4.1.4.3
3.7	Service Reliability/Maintainability/Availability	
3.7	Plan and implement reliability, availability, and maintainability procedures	4.1.4.1
3.7.1	Service life of 24 hrs/day, 7 days/week for 5 years	4.1.4.3
3.7.2	/1 Available for not less than .99701 in a 30 day period	4.1.4.2

Specification's Section 3 Paragraph Number/ Shall Number	Requirement Title, Summary or Key Words	Verification Method - Specific Reference
3.7.2	/2 Availability of specific line no less than 0.95	4.1.4.2
3.7.2	/3 Maintain record of unavailable time	4.1.4.1 or 4.1.4.2
3.7.3	Organizational element responsible for reliability program	4.1.4.1
3.8	Documentation	
3.8.1	/1 Printing and distribution of instructional material	4.1.4.1
3.8.1	/2 Subject to FAA approval	4.1.4.1
3.8.1	/3 Minimum contents of DUAT user's guide	4.1.4.1
3.8.2	/1 Prepare all public information	4.1.4.1
3.8.2	/2 Public information subject to FAA approval	4.1.4.1
3.8.3	Submit instructional material to contracting officer	4.1.4.1
3.9	Service Expandability	
3.9b	/1 Service efficiency not lost	N.A.
3.9b	/2 Enhancement receive FAA approval	N.A.
3.9b	User assistance number	4.1.4.3
3.10	/1 Toll free assistance number	4.1.4.3
3.10	/2 Request assistance and report problems	4.1.4.3
3.10	/3 Available 7 days/week, 24 hours/day	4.1.4.3
3.10	/4 Provide mailing address	4.1.4.1 or 4.1.4.3

N.A. = not applicable for testing at this time.

TABLE 4. NATIONAL ACCEPTANCE TEST REQUIREMENTS TRACEABILITY MATRIX (CONTINUED)



APPENDIX I

10. REFERENCE DOCUMENTS.

The documents in this section are provided as reference material for background information only.

ANSI X3.28      Revised: 1976      Procedures for the use of the Communications Control Characters of American National Standards Code for Information Interchange in Specified Data Communication Links.

NPFC 4120/3  
(Rev. 8-82)      Department of Defense Single Stock Point (DOD-SSP) for Specifications and Standards, A Guide for Private Industry.

EIA-RS-232-C      Interface Between Data Terminal Equipment and Data Communications Equipment Employing Serial Binary Data Interchange

EIA-RS-449      General Purpose 37-Position and 9-Position Interface for Data Terminal Equipment and Data Circuit-Terminating Equipment Employing Serial Binary Data Interchange.

FAA-E-2683C      Specification for the Flight Service Automated System Volume I, Model 1 Full Capacity System and Hardware.

FAA-E-2684b      Specification for the Flight Service Automated System: Volume II, Model 2 Software.

FAA-E-2685C      Specification for the Flight Service Automated System, Volume III, Model 1 Full Capacity Software and Hardware.

National Weather Service Radar Manual, Part C, Dated 4/82.

FAA Aeronautical Data

No document number      Airport Facility Directory  
(Landing Facilities)

No document number      Preferred Routes and Airways  
(Jet and Victor)

Source of ANSI Documents. Copies of ANSI Documents are available for purchase from:

American National Standards Institute  
1430 Broadway  
New York, N.Y. 10018

APPENDIX II

20. ACRONYMS.

Follows are the list of acronyms used in this Functional Specification:

<u>Acronyms</u>	<u>Meaning</u>
ABNT	Tropical Weather Outlook
AC	Severe Weather Outlook
ACK	Acknowledge
AFSS	Automated Flight Service Station
AIRMET	Airmen's Meteorological Information
ALNOT	Alert Notice
AMD	Amendment
AMOS	Automated Meteorological Observing Station
ANSI	American National Standards Institute
ARTCC	Air Route Traffic Control Center
ASCII	American Standard Code for Information Interchange
ATC	Air Traffic Control
AUTOB	Automatic Observing Station
AWW	Severe Weather Watch Alert
AXNT	Tropical Weather Discussion
BCC	Binary Control Character
CO	Central Office
COR	Correction
CPFS	Computer Program Functional Specification
CR	Carriage Return
CWA	Center Weather Advisory
DUAT	Direct User Access Terminal
EIA	Electronic Industry Associates
ENQ	Enquiry
EDF	End of File
EDL	End of Line
EDM	End of Message
ETA	Estimated Time of Arrival
ETD	Estimated Time of Departure
ETE	Estimated Time Enroute
ETX	End of Text
FA	Area Forecast
FA AMD	Area Forecast Amendment
FA COR	Area Forecast Correction
FAA	Federal Aviation Administration
FD	Winds and Temperatures Aloft Forecast
FDC NOTAM	NOTAM Issued by the National Flight Data Center
FSDPS	Flight Service Data Processing System
FSS	Flight Service Station
FT	Terminal Forecast
FT AMD	Terminal Forecast Amendment
FT COR	Terminal Forecast Correction
GF	Grid Winds
GS	Group Separator
ICAO	International Civil Aviation Organization

<u>Acronyms</u>	<u>Meaning</u>
ICD	Interface Control Document
IFR	Instrument Flight Rules
INREQ	Information Request
LF	Line Feed
LOCID	Location Identifier
MSL	Mean Sea Level
MSN	Message Switching Network
MTBF	Mean Time Between Failure
NADIN 1A	National Airspace Data Interchange Network
NAK	Negative Acknowledge
NAS	National Airspace System
NAVAID	Navigation Aid
NDB	National Data Base
NFDC	National Flight Data Center
NICS	National Interfacility Communications System
NOTAM or NO	Notice to Airmen
NOTAM D	Domestic Notice to Airmen given local and distant dissemination
NTSB	National Transportation Safety Board
NWS	National Weather Service
PIREP	Pilot Report of Weather Conditions
QALQ	Data Request on Aircraft
RAM	Random Access Memory
RAMOS	Remote Automatic Meteorological Observing System
RCC	Rescue Coordination Center
RS	Record Special Observation
RTD	Routine Delayed Forecast
SA	Surface Observation
SAR	Search and Rescue
SCC	Source Code Control System
SD	Radar Report
SIDS	Standard Instrument Departures
SIGMET	Significant Meteorological Information
SOM	Start of Message
SOH	Start of Header
SP	Special Surface Aviation Weather Observation
SPL	Special Observation (Radar)
STARS	Standard Terminal Arrivals
STA	Start of Header Control Character
STX	Start of Text Control Character
SW	Supplemental Surface Observation
TELCO	Telephone Company
UA	Pilot Report
USP	Urgent Special Surface Weather Observation
UTC	Universal Coordinated Time
UUA	Urgent Pilot Report
UWS	Urgent Significant Meteorological Information
VFR	Visual Flight Rules
VOR	Very High Frequency Omni Directional Range
VORTAC	Very High Frequency Omni Directional Range/ Tactical Air Navigation
VT	Vertical Tabulation



<u>Acronyms</u>	<u>Meaning</u>
WA	Airman's Meteorological Information (AIRMET)
WH	Tropical Depression/Hurricane Advisory
WMSC	Weather Message Switching Center
WS	Significant Meteorological Information (SIGMET)
WST	Convective SIGMET
WT	Weather Trend
WTNT	Tropical Cyclone Advisory
WTPZ	Marine Tropical Cyclone Advisory
WOPZ	Special Tropical Disturbance Statement
WW	Severe Weather Forecast or Bulletin
WW-A	Severe Weather Warning Amendment
WWNT	Subtropical Storm Advisory



# APPENDIX III

## 30. PARAMETERS.

This appendix lists the parameters used in the DUAT specification. The parameters, as shown herein, shall be adapted and/or input in accordance with the limitations specified in other sections of this specification. The parameter value shall only be changed at the request of the FAA.

A nominal value, range of values and suggested increment with the range may be used are also included. These different values are specified in the following format.

Non (Min.-Max., I) U

where:

Non	The normal value (example only, use values as stated in the specification)
Min.-Max.	The range of values
I	Increment that can be used in specifying the other values
U	Unit value

### UNITS OF VALUE

Deg.	=	Degrees
Mi.	=	Nautical Miles
Min.	=	Minutes

## 30. PARAMETER LIST.

DESIGNATION	DESCRIPTION	VALUE	UNITS
ATCT	Air Traffic Control Transmit Time	60 (10-120,10)	Min.
CBRA	C-Band Radius	75 (50-300,50)	Mi.
FSST	Flight Service Station Transmit Time	30 (10-120,10)	Min.
FWAC	Forecast Winds Aloft Corridor Width	200 (100-600,50)	Mi.
LWXR	Local Weather Search Area Radius	25 (10-100,5)	Mi.

APRP	Maximum Message Acknowledgment Time	10 (10-60,10)	Min.
RWXC	Route Weather Corridor Width	50 (10-100,5)	Mi.
SBRA	S-Band Radius	200 (50-300,50)	Mi.

TABLE 1

Programmed data transfers by the WMSC will be accomplished in accordance with Paragraph C-3c(1)(a). The Class/Category Segment of the Header Field in this type of data transfer will consist of a four-character catalog number where:

1st character	= Data class
	0 = Unscheduled data
	1 = Scheduled data
2nd and 3rd character	= Data type
4th character	= No current FSAS application, will always be zero (0)

The catalog number assignment are as follows. Note the report type "SA" includes SA, RS, USP, and SP reports.

#### SCHEDULED DATA

<u>Catalog Number</u>	<u>Data Type</u>
1000	Scheduled Domestic SA
1010	Scheduled Military SA
1020	Scheduled Canadian SA
1030	Scheduled Mexican/Caribbean SA
1040	Not Assigned
1050	Scheduled Domestic FD-1
1060	Scheduled Domestic FD-2
1070	Scheduled Domestic FD-3
1080	Scheduled Domestic FD-8
1090	Scheduled Domestic FD-9
1100	Scheduled Domestic FD-10
1110	Scheduled Domestic FT
1120	Scheduled Canadian FT
1130	Scheduled Domestic FA
1140	Scheduled Domestic TWEB
1150	Scheduled Domestic SYNS
1160	Scheduled Mexican FT
1170	Scheduled Canadian FD-1
1180	Scheduled Canadian FD-2
1190	Scheduled Canadian FD-3
1200	Scheduled Domestic WST

UNSCHEDULED DATA

Catalog Number

Data Type

0010	Unscheduled Domestic SA
0020	Unscheduled Military SA
0030	Unscheduled Canadian SA
0040	Unscheduled Mexican/Caribbean SA
0050	Unscheduled Domestic UA
0060	Unscheduled Domestic FD-1
0070	Unscheduled Domestic FD-2
0080	Unscheduled Domestic FD-3
0090	Unscheduled Domestic FD-8
0100	Unscheduled Domestic FD-9
0110	Unscheduled Domestic FD-10
0120	Unscheduled Domestic FT
0130	Grid Wind Bulletins
0140	Unscheduled Canadian FT
0150	Unscheduled Mexican FT
0160	Unscheduled Military FT
0170	Unscheduled Canadian FA
0180	Unscheduled Canadian FD-1
0190	Unscheduled Canadian FD-2
0200	Unscheduled Canadian FD-3
0210	Unscheduled Mexican/Caribbean FA
0220	Unscheduled Caribbean FT
0230	Unscheduled Pacific FA
0240	Unscheduled Domestic SD
0250	Unscheduled Domestic SW
0260	Unscheduled Domestic NOTAMs
0270	Unscheduled Domestic FA
0280	Unscheduled Domestic AC
0290	Unscheduled Domestic WW and WW-A
0300	Unscheduled Domestic AWW
0310	Unscheduled Domestic WH (Includes Hurricane and Tropical Depression Advisories)
0320	Unscheduled Canadian SD
0330	Unscheduled Caribbean SD
0340	Unscheduled Domestic WST
0350	Unscheduled Domestic WS
0360	Unscheduled Domestic WA
0370	Unscheduled FDC NOTAMs
0380	Unscheduled International NOTAMs
0390	Unscheduled Canadian WS
0400	Unscheduled GENOTs
0410	Unscheduled CARF/OAK/ZAN NOTAMs
0430	Unscheduled Domestic FX
0440	Center Weather Advisories

REQUEST/REPLY RESTORAL LIST

The initial Request/Reply Restoral List includes the following catalog numbers:

SCHEDULED DATA

Data Type

1000	Includes all scheduled and unscheduled SAs
1010	Includes all scheduled and unscheduled military SAs
1050	
1060	
1070	
1080	
1090	
1100	
1110	
1130	
1200	

UNSCHEDULED DATA

Data Type

0010	Included in 1000 scheduled
0020	Included in 1010 scheduled
0050	
0060-0110	Included in scheduled 1050-1100
0120	Included in scheduled 1110
0130	
0160	
0240	
0250	Included in scheduled 1000
0260	Includes NOTAM Summary
0270	
0280	
0290	
0300	
0310	
0340	
0350	
0360	
0370	
0400	
0440	

The catalog numbers listed below will be added to the Restoral List and be available via the request reply at a later date:

Scheduled Data

1020  
1030  
1120  
1140  
1150  
1160  
1170  
1180  
1190

Unscheduled Data

0030  
0040  
0140  
0150  
0170  
0180  
0190  
0200  
0210  
0220  
0230  
0320  
0330  
0380  
0390  
0410  
0430



APPENDIX V

FAA-S-2795  
SPECIFICATION CHANGE 1  
August 16, 1988

FAA-E-2661A

APPENDIX XX  
NADIN TO MULTIPPOINT USER  
(X3.28, 2.5, A4)  
INTERFACE CONTROL DOCUMENT  
MAY 5, 1988



FAA-E-2661A

TABLE OF CONTENTS

		<u>PAGE</u>
XX-1	INTRODUCTION	1
XX-1.1	Purpose	1
XX-1.2	Organization	1
XX-1.3	Technical Summary	1
XX-2	Hardware Characteristics	1
XX-2.1	Equipment Required	1
XX-2.1.1	MODEM	1
XX-2.1.2	Compatibility	1
XX-2.2	Line Interface	2
XX-3	Data Transfer Procedure	2
XX-3.1	Link Control	2
XX-3.1.1	Establishment	2
XX-3.1.1.1	Polling	2
XX-3.1.1.2	Selection with Response	3
XX-3.1.2	Message transfer	4
XX-3.1.2.1	Message Delineators	4
XX-3.1.2.2	Block Replies	4
XX-3.1.2.3	Reply-Request Sequence	5
XX-3.1.3	Termination	5
XX-3.1.4	Recovery	5
XX-3.1.4.1	Response Timer	6
XX-3.1.4.2	Receive Timer	6
XX-3.1.4.3	Time-Out	6
XX-4	Message Code & Format	6
XX-4.1	Information Message Format	7
XX-4.1.1	Heading Line	7
XX-4.1.2	Address Line(s)	8
XX-4.1.3	Origin Line	9
XX-4.1.4	Message Text	10
XX-4.1.5	Ending	10
XX-4.2	Service Message Format	10



## APPENDIX XX

### NADIN TO MULTIPOINT USER INTERFACE

#### XX-1 Introduction

##### XX-1.1 Purpose

The information contained herein describes the interface requirements for a connection between a multipoint user and the NADIN Concentrator.

##### XX-1.2 Organization

The material in this document contains a description of the electrical and functional requirements necessary for communication with a NADIN Concentrator.

##### XX-1.3 Technical Summary

The user shall be connected with a NADIN Concentrator. MODEMS shall operate synchronously at 2400BPS over a four-wire communication circuit. The communications protocol shall be in accordance with ANSI X3.28, Subcategories 2.5 & A4, as specified herein.

#### XX-2 Hardware Characteristics

##### XX-2.1 Equipment required

Leased or customer provided MODEMS and communication lines shall interface with a port on a NADIN concentrator.

##### XX-2.1.1 MODEM

The MODEMS shall be capable of operating synchronously at 2400BPS over a 4-wire dedicated communication circuit and be in accordance with Electronic Industries Association (EIA) Standard RS-232C. NADIN shall operate with Carrier permanently on. The user shall raise carrier only when polled or selected and raise and maintain carrier throughout duration of a message transfer.

##### XX-2.1.2 Compatibility

The interface of the MODEM with the communication line shall exhibit BELL 201 series compatibility.

## XX-2.2 Line Interface

The MODEMS and equipment shall operate over the equivalent of an unconditioned Type 5 Service over a 4-wire circuit, with no signaling, in accordance with FCC tariffs 9, 10, 11. Circuits terminated at the FAA ARTCC Master Demarcation Systems (MDS) must meet the Level 0 Decibel Transmission Level Point (00DBTLP) requirement.

## XX-3 Data Transfer Procedure

### XX-3.1 Link Control

The user will follow the procedures outlined in ANSI X3.28 subcategory 2.5 when operating in a multipoint configuration at a data rate of 2400BPS, and message transfer subcategory A4 (message-oriented with replies and longitudinal checking) as specified herein. The fast-select option shall not be used initially; however, the capability must be present in the event it is required in the future.

#### XX-3.1.1 Establishment

Prior to the establishment of transmission, the control station (NADIN) shall be designated as master and the tributary stations shall be designated as slaves. NADIN may either poll to assign master status to one of the tributaries or select a slave to receive a transmission.

##### XX-3.1.1.2 Polling

The control station (NADIN) shall assign a single upper case alphabetic character for each tributary on the circuit. NADIN shall poll continuously for as long as polling cycles result in positive responses. Following a polling cycle with no positive response, there shall be a poll rest variable up to 30 seconds. The polling sequence shall be:

S	S	S		E	
Y	Y	Y	*	N	* = assigned prefix for tributary
N	N	N		Q	

When a tributary detects its assigned polling sequence, it shall assume master status and NADIN shall assume slave status. If the tributary has traffic to send, it shall initiate message transfer (XX-3.1.2) or, if it has nothing to send, shall initiate the termination (XX-3.1.3), then resume slave status.

If NADIN receives an invalid response or no reply from the polled tributary, it shall retry N (system parameter) times to receive a valid response. If unsuccessful, NADIN shall invoke recovery (XX-3.1.4) and initiate termination (XX-3.1.3).

#### XX-3.1.1.2 Selection with Response

NADIN shall interrupt polling (but not message transfer) when an output message is on queue for a tributary. Upon detection of its select sequence, the tributary shall assume slave status. The select prefix will be the lower case of the poll character assigned to the tributary. The response prefix by the tributary may be either the upper or lower case of the assigned poll character. The select sequence is:

S	S	S	E	
Y	Y	Y	*	N
N	N	N		Q

\* = Assigned prefix for tributary

The tributary shall respond in one of two ways:

#### READY TO RECEIVE

S	S	S	A
Y	Y	Y	* C
N	N	N	K

#### NOT READY TO RECEIVE

S	S	S	N
Y	Y	Y	* A
N	N	N	K

\* = Assigned prefix for tributary

If NADIN receives a NAK, invalid response or no reply, it shall retry selection up to a maximum of N (system parameter) times, then invoke recovery (XX-3.1.4) and initiate termination (XX-3.1.3). Following recovery, or following normal transfer and termination by the tributary, NADIN shall resume polling.

FAA-E-2661A

### XX-3.1.2 Message Transfer

Message transfer control procedure Subcategory A4 is applicable in systems where a master station sends a complete message as a single block to a single slave station. The master sends each message and waits for a reply. If the reply indicates that the message was accepted, the master may send another message or it may initiate termination. If the reply indicates the message was not accepted, the master shall attempt retransmission of the message up to a maximum of two times before initiating termination. Only one outstanding message block shall be allowed.

#### XX-3.1.2.1 Transmission Block and Message Delineators

Each message block shall consist of the following :

1. 3 synchronous idle characters (SYN)
2. Start of Heading (SOH) character - delineator
3. Header information
4. Start of Text (STX) character - delineator
5. Text data
6. End of Text (ETX) character - delineator
7. Block Check Character (BCC) for bit-stream integrity. BCC shall be the binary sum, without carry, of the 7 bits of each character transmitted. The summation shall start with the first character following SOH and shall stop with the inclusion of the ETX character.

#### XX-3.1.2.2 Transmitted Block Replies

When the slave detects end of transmission (ETX/BCC), it shall respond in one of two ways to accept or reject the message:

##### MESSAGE ACCEPTED

S	S	S	A
Y	Y	Y	* C
N	N	N	K

##### MESSAGE REJECTED

S	S	S	N
Y	Y	Y	* A
N	N	N	K

\* = Assigned prefix for slave

Upon detecting ACK, the master may continue to transmit the next message on queue or initiate termination. Upon detecting NAK, the master shall re-transmit the message up to two times. If there are 3 unsuccessful attempts to deliver the message, the master shall invoke recovery (XX-3.1.4) and proceed with the next message in queue or, if none, shall initiate termination (XX-3.1.3).



FAA-E-2661A

#### XX-3.1.2.3 Reply/Request Sequence

An invalid reply or no response shall, after time-out, cause the master to transmit a Reply/Request Supervisory Sequence with a prefix of "R".

#### SUPERVISORY SEQUENCE

S	S	S	E
Y	Y	Y	R N
N	N	N	Q

The slave shall repeat its last ACK or NAK transmission. The master shall attempt up to 3 R/R enquiries to obtain a positive response then, if unsuccessful, shall invoke recovery (XX-3.1.4) and initiate termination (XX-3.1.3).

#### XX-3.1.3 Termination

Termination shall remove master/slave status from both stations and return NADIN to master and the tributary to slave. Incomplete or unacknowledged messages held in the buffer by the receiving station shall be discarded upon receipt of the termination sequence.

#### TERMINATION SEQUENCE

S	S	S	E
Y	Y	Y	O
N	N	N	T

#### XX-3.1.4 Recovery

Recovery procedures include removing messages from the output queue that the master was unable to successfully transfer and issuing a supervisory report to internal operations. These are system guidelines to be used by all stations. It is recognized that detailed methods of message handling may vary by station, however, some form of edit functions should be employed at a supervisory position or terminal.

#### XX-3.1.4.1 Response Timer

This timer shall be used to protect against an invalid or no response and shall be started after the transmission of any ending character (ENQ or ETX) where a response is expected. The timer shall be stopped upon receipt of a valid reply from the communications line (ACK, NAK or EOT). The time value shall be adjustable from one to three seconds (system parameter).

#### XX-3.1.4.2 Receive Timer

This timer shall be used to protect against non-recognition of end-of-text by a receiving station and shall be started upon receipt of SOH. The timer shall be stopped upon receipt of a valid terminating character (ETX or EOT). The time value shall be 30-seconds.

#### XX-3.1.4.3 Time-Out

When time-out occurs at a master station, the procedure in XX-3.1.2.3 shall be followed. Time-out by the slave shall cause the station to notify the supervisory function or operator and transmit a NAK. If NADIN, as the slave, times out on its receive timer, it shall initiate termination (XX-3.1.3) and resume master status.

#### XX-4 Message Code and Format

The message code utilized shall be the IA-5 code as described in ICAO Annex 10, Volume I. Character parity shall be "ODD" and computed in accordance with ANSI standards. All messages exchanged between NADIN and the user shall be organized as specified herein. Message size shall not exceed 3700 characters from Start-of-message (SOH) to End-of-message (ETX). Each line shall not exceed 80 characters. New ending procedures (ICAO Annex 10, Volume II) shall be invoked by NADIN upon receipt of messages exceeding 3700 characters. In such case, a service message will be generated back to the originator.

August 16, 1988

FAA-E-2661A

**XX-4.1 Information Message Format between NADIN and USER**

This section describes the format to be used for information messages exchanged between NADIN and USER.

**XX-4.1.1 Heading Line**

1	2	3
Start of Header	Transmission Identification	Operation Information
Field 1	Start of Header (SOH)	
	o Character 0/1 (SOH) always present	
	o Character 1/13 Group Separator (GS) (Optional)	
Field 2	Transmission Identification	
	o 3 Alpha characters (assigned by mutual agreement)	
	o 4 Numerics (sequential message numbering)	
	o Always present	
Field 3	Operation Information	
	o When used, first character is a "space"	
	o Data not to exceed 67 additional characters	
	o Optional by circuit	

Note: Sequential numbers start at 0001 and run for a 24-hour day using Coordinated Universal Time (UTC). Separate numbers are used for input and output for each station on the circuit. Sequence numbers may be repeated within the same 24-hour day.

May 5, 1988

XX-7

FAA-E-2661A

XX-4.1.2 Address Line

1	2	3	4
Alignment Function	Priority	Address	Alignment Function
Field 1	Alignment Function		
	<ul style="list-style-type: none"><li>o Carriage Return, Line Feed</li><li>o Always Present</li></ul>		
Field 2	Priority		
	<ul style="list-style-type: none"><li>o 2 Alpha characters</li><li>o Always present</li></ul>		
Field 3	Address		
	<ul style="list-style-type: none"><li>o Space character 2/0</li><li>o 8 Alpha-character ICAO address</li><li>o Additional addresses may be added with each preceded by a Space character</li><li>o Maximum of 3 lines of addresses</li><li>o Each line of addresses shall be completed with CR LF, except for the last line which shall end with the end of address sequence.</li><li>o Always present</li></ul>		
Field 4	Alignment Function (End of Address)		
	<ul style="list-style-type: none"><li>o Carriage Return, Line Feed</li><li>o File Separator Code 1/12 (FS)</li><li>o Always present</li></ul>		

XX-4.1.3 Origin Line

1 Date Time Group	2 Origin	3 Priority Alarm	4 Additional Data Field	5 Alignment Function
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Field 1      Date-time Group

- o 6-Digits indicating time of message preparation
- o Always present

Field 2      Origin Address

- o Space character 2/0
- o 8-character ICAO address of message originator
- o Always present

Field 3      Priority Alarm

- o Conditional for SS Priority only
- o 5 Bell characters 0/7

Field 4      Additional Data Field (transparent to NADIN)

- o When used, first character is a Space and there shall be a maximum length of 52 characters
- o Transmission control characters not permitted
- o The additional data field shall be formatted as described in ICAO Annex 10, Volume II, Paragraph 4.4.18.1.3
- o If an SS message is transmitted, the priority alarm sequence must precede any information that may be contained in this field.
- o If the priority alarm sequence is inserted, it shall reduce the maximum allowable characters in this field by 5, i.e., the maximum allowable characters shall be 47.

Field 5      Alignment Function

- o Carriage Return, Line Feed
- o Always present

XX-4.1.4 Message Text

1	2
Start of Text	Text

Field 1      Start of Text (STX)

- o STX character 0/2
- o Always present

Field 2      Text

- o 80 characters per line maximum
- o Lines separated by Carriage Return, Line Feed
- o Always present

XX-4.1.5 Ending

1	2
Alignment Function	End of Text

Field 1      Alignment Function

- o Carriage Return, Line Feed
- o Always present

Field 2      End of Text

- o Vertical Tab (VT) character 0/11
- o End of Text (ETX) character 0/3
- o Always present

TT-4.2 Service Message Format

Format for Service Messages shall be in accordance with XX-4.1.  
Text shall be in accordance with ICAO Annex 10, Volume II.